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EDITORIAL

Canada's Agricultural Innovation System

Denis Petitclerc, Ph.D. MBAa

Scientist, entrepreneur and former Director General, Science and Technology Branch, Agriculture and Agri-Food Canada.

Providing to people their basic needs while ensuring their wellbeing and wellness is society's daunting task. These basic needs include not only food, water, shelter, and clothing, as stated in Maslow's hierarchy of needs, but also education, sanitation, healthcare, and public safety. However, fulfilling these obligations, especially related to healthy food and clean water, requires judicious and appropriate investments by governments of all nations.

Food, feed, fiber and, currently, an ever increasing amount of fuel are supplied by those farming the land. According to the United Nations, the world population will grow from 7.6 billion in 2017 to 10.6 billion people (estimates ranging from 8.6 and 12.6) by 2067 with 93 % of this growth occurring in Asia and Africa.¹ Such population growth will further increase the disparities among regions of the world in arable land per capita available for food and feed production.² In order to feed this burgeoning world population and ensure food security for all while facing current challenges associated with the environment and climate change, all nations need to work together to find innovative solutions through research and development (R&D). If these global problems are not enough to justify more investment in R&D, readers are referred to the most comprehensive meta-analysis study evaluating the returns on investment derived from agriculture R&D by Alston et al. (2010)³ and the discussion by Gray (2014)⁴ on the solutions to the agricultural research funding conundrum. These studies and many more suggest consistent favorable cost-benefit ratios and high internal rates of returns from investment in agricultural R&D. Despite this evidence, public and private spending on agricultural R&D have decreased in Canada and in many developed countries over the last decades (Hurley et al., 2016).⁵ Feeding the world will also require a paradigm shift to increasing productivity while, at the same time, reducing the tremendous amount of food loss and waste occurring globally.⁶ Ultimately, better strategic approaches, greater cooperation, more coordination and additional investment throughout the world will be paramount if we are to feed the entire world properly.

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Editorial (continues)

Canadian agriculture and support to R&D

Canada is a vast country, the second largest in the world with only 37 million people or 0.48 % of the world population. We have a rich and diverse agricultural and agri-food sector that provides one in eight Canadian jobs and generates \$113.8 billion or 6.6 % of the country's gross domestic product.⁷ Canada is the fifth-largest global exporter of agri-food products generating 5.7 % of the total value of world food and agricultural exports. It has also become the single largest exporter of wheat, canola and lentils⁸ and a major exporter of beef and pork.⁹

"Agricultural innovation¹⁰ is the key driver of economic growth in the [agri-food] sector, enabling greater competitiveness as well as opportunities to meet food security and sustainability goals in Canada and around the world."⁷ Investing in science, e.g. knowledge and technology, is however a risky business, and governments have a critical role in alleviating and mitigating these risks, especially in agriculture.

In Canada, support for agricultural innovation started at the federal level in January, 1884 when Georges Auguste Gigault, member of Parliament for Rouville in Quebec, rose in the House of Commons to beg help for Canada's farmers. He reminded the members that "agriculture is the basis of public prosperity"¹¹ with 80 % of the Canadian population deriving their living from the land. A week later, a select committee was appointed to investigate ways "to improve the conditions of those who till the land" which led to the Experimental Farm Station Act signed into law on June 2, 1886 and the creation of the first five experimental farm stations.¹²

From an economic and policy point of view, investing in "agriculture knowledge for which our farmers are in great need" made sense then, and it surely makes sense now even though those farming the land are far fewer than before given the tremendous progress achieved in increased productivity over the years. This progress occurred because of the innovations

created by agricultural scientists and engineers thanks in great part to investments made by governments in research, education, and technology transfer.^{13, 14} However, our farmers' challenges are greater than ever, especially related to climate change, and the support from governments and R&D institutions is therefore needed more than ever.

Nowadays, with its national network of twenty R&D Centres, Agriculture and Agri-Food Canada (AAFC) provides leadership for the growth and development of a competitive, innovative and sustainable Canadian agriculture and agri-food sector. AAFC is the most important provider of research and technology along with information, policies, programs, and services to the agriculture, agri-food and agri-based sector. The National Science and Engineering Research Council and Genome Canada along with the different provincial granting agencies also play an important role in supporting R&D, mainly through their financial support of university research. The National Research Council of Canada also provides support to the industry through its aquatic and crop resource development initiative; for example, the Canadian Wheat Improvement Program for the improvement of wheat varieties serves as the National Research Council's contribution to the Canadian Wheat Alliance along with AAFC, the province of Saskatchewan and the University of Saskatchewan as partners. Unfortunately, key funders of agricultural research in Canada have either under-invested or decreased their investments with funding declining steadily over the past three decades. For example, huge budget cuts, up to a cumulative 20%, occurred in the AAFC Science and Technology Branch in 2012 and 2013. As of 2015, budgetary expenditures in R&D represented a meager 0.046% of Canada's total GDP, ranking it 7th in the world.⁷ The government of Canada is currently consulting Canadians as it seeks to develop A Food Policy for Canada exploring how best to align and coordinate current and future federal initiatives strongly linked to agriculture and food. Indeed, we should improve our ability to innovate and completely alleviate food insecurity both in Canada and abroad.

For more in-depth information about Canada's

agricultural innovation system, readers are referred to an overview written by the Agriculture Institute of Canada.⁷

Frameworks to support innovation

Science defines the state of knowledge as obtained and tested iteratively by the scientific method. In agricultural research, this knowledge is used to generate innovations that will help farmers and food processors mitigate risks and, ultimately, offer consumers innovative, nutritious and healthy food products.

It is often heard in Canada that Canadians produce excellent science but are weak at generating innovations. Indeed, for years, scientists in public institutions were discouraged to work in direct relationships with the private sector. In the 1990s, AAFC addressed this issue by developing initiatives and later programs to encourage the involvement of the industry in federal R&D activities. The Matching Investment Initiative was an early AAFC approach that generated over 900 applied-research projects over a five-year period in the late-1990s.¹⁵ Industry partners gained formal access to scientists in federal laboratories by matching 50 % of the project cost through a combination of cash and (or) in-kind contributions; cash contributions were managed for the first time through the innovative use of specific purpose account over successive fiscal years. Recognizing the successes of the Matching Investment Initiative and the importance of industry collaborative research, subsequent programs were designed to expand the participation of scientists outside AAFC laboratories thereby mobilizing the entire Canadian scientific capacity to innovate. To allow this, AAFC introduced another innovation into its programs: the concept of convergence of voted appropriations.

At the federal government level, financial support is obtained either thru voted appropriations (a parliamentary authority sought through an appropriation bill) or statutory expenditures authorized by Parliament through legislation other than an appropriation act (see footnote for AAFC

budget example¹⁶). Voted appropriations are either solely used to support in-house operations, including government R&D activities (vote I) or to provide grants and contributions (vote 10) to stakeholders outside the government.¹⁷ Until the early 2000s, these voted appropriations were like two solitudes that could never work together in full-fledge cooperation. AAFC then developed programs that allowed the convergence of voted appropriations (I and 10) toward agreed-upon shared goals and outcomes. Hence, an industry partner conducting a joint project with a public institution could receive vote 10 funding from AAFC to support the R&D activities of a university collaborator while a federal scientist would be formally provided with vote I funding to conduct its collaborative work; a major critic associated with this approach relates nowadays to the administrative burdens raised by funding recipients when reporting on progress made under the different streams of activities (university vs. government scientists) and different sources of funding (vote I vs. 10). At another level, this new way of doing business promoted closer relationships and stronger collaboration over time among different AAFC Branches, namely the Program Branch, the Science & Technology Branch, and the Market & Industry Service Branch, in delivering innovation programs.

The current AAFC partnership

The AAFC budget currently supports the implementation of services and programs under the Canadian Agricultural Partnership (CAP), a five-year (2018–2023), \$3 billion policy framework of federal, provincial and territorial governments used to strengthen the agriculture and agri-food sector. CAP focus on six shared priority areas: science, research, and innovation; markets and trade; environmental sustainability and climate change; value-added agriculture and agri-food processing; public trust; and risk management. CAP in essence is a continuation of the previous \$3 billion, five-year Growing Forward agreements initiated in 2008 and renewed in 2013.

CAP is a suite of three different initiatives:

(1) Federally-funded Activities and Programs furthered discussed below and delivered by AAFC;

(2) Cost Shared Programs: a \$2 billion investment by the Canadian government to support programs of the provinces and territories. Cost of this initiative is shared 60:40 based on bilateral agreements to ensure programs are tailored to meet regional needs throughout Canada. Readers might refer to Quebec and Ontario web sites for examples of programs on shared priorities; and,

(3) Business Risk Management Programs: a series of insurance investments to help producers manage significant risks that threaten the viability of their farm and are beyond their capacity to manage. It is, however, expected that innovations developed over the years under initiatives (1) and (2) will help farmers better manage and mitigate risks associated with their farming activities, especially those related to climate change, disease occurrence, and other threats facing them, ultimately reducing the cost of these insurance programs.

The Federally-funded Activities and Programs (\$1,153.5 million) to support sector growth are focusing on three key areas:

(1) Growing Trade and Expanding Markets - \$297 million;

(2) Supporting Diversity and a Dynamic, Evolving Sector - \$166.5 million; and

(3) Innovative and Sustainable Growth in the Sector - \$690 million.

Overall, these three key areas include \$686.5 million of vote 10 appropriation available to the sector over five years in federal programs and \$467 million of Federally-funded Activities and Program (vote 1 appropriation) that directly benefit producers and processors. The latter vote 1 funding is allocated

by the Government to AAFC to address priorities identified by the agricultural sector during consultations in the development of the CAP framework.

While the first two key areas do not directly support R&D activities, the latter aims to enhance "the competitiveness of the sector through research, science and innovation, and adoption of innovative products and practices, with an emphasis on sustainable and clean growth." Although previous Growing Forward framework funding for research, science and innovation was announced at \$698 million (see Growing Forward AgriInnovation Program), no additional investment was provided under CAP for research, science and innovation despite its popularity and the numerous requests made by the sector.

The key area of Innovation and Sustainable Growth in the Sector is supported by two programs:

(i) the **AgriScience Program** is "a five-year, up to \$338 million initiative to support leading edge discovery and applied science, and innovation driven by industry research priorities. Designed to accelerate the pace of innovation, the program supports pre-commercialization activities and invests in cutting-edge research to benefit the agricultural and agri-food sector."

The AgriScience program offers funding through two components:

a) Clusters¹⁸

Non-refundable funding provides support to "industry-led and commodity specific science and research projects that address priority themes and horizontal issues, and coordinate research activities across Canada. Clusters are required to address environment and climate change issues unique to their sector and are encouraged to support research dissemination, extension and decision support tools for producers." Application intake for the clusters component was originally coordinated with the industry but was closed as of February 2018. Under Growing Forward II, 14 clusters were supported

and 18 clusters are expected to be supported under CAP. To support more clusters, AAFC has decreased its cluster contribution from 75 % to 70 % with variety finishing activities supported at only 50 %, thereby requiring greater cash contributions from industry.

An example of outcomes related to cluster science activities can be found at this [link](#) of the Canola Council of Canada; grower experiences and project summaries illustrating how "research pays dividends", along with practical ways to apply results to improve profitability on the farm, can also be found in this [NEW Science Edition 2017](#).

b) [Projects](#)¹⁹

Non-refundable funding provides support to "specific shorter-term science projects to help industry overcome challenges and address fiscal barriers experienced by small and emerging sectors. Project activities must address key industry and government priorities." The Canadian government will contribute up to 50 % (for-profit organisations) or 70 % (not-for-profit organisations) of the costs and, unlike MII, in-kind contributions are minimal; the latter making it especially difficult for small enterprises or emerging sectors to access this program given often their limited financial resources. The AgriScience program states that it supports leading edge discovery but, in reality, it supports applied R&D activities (2-5 years) downstream the innovation continuum, and often largely finalized, e.g. variety finishing. Of notice, however, the government has now signalled an emphasis on the environment and climate change which might bring about more upstream R&D activities.

(ii) The [AgrilInnovate Program](#)²⁰ is "a five-year, up to \$128 million initiative to accelerate the demonstration, commercialization, and/or adoption of innovative agri-based products, technologies, processes or services that increase agri-sector competitiveness and sustainability. The program will provide repayable contributions up to 50% of the project costs that: demonstrate a recently proven innovation; adopt new or world-leading agricultural

products, technologies or services in clean technology, automation or robotics, and precision agriculture; introduce significant improvement to the value-added sector; provide new opportunities, or expand existing export opportunities." This program was designed to provide support for activities (1-2 years) near the end of the innovation continuum to ensure commercialisation and the adoption of innovation.

A Case for Basic Research²¹

Basic knowledge-driven research is the riskiest of all investments in science because its results are clearly unpredictable and its outcomes are far in the future in terms of application. US president [Ronald Reagan](#) once said that "although basic research does not begin with a practical application, when you look at the results over the years, it ends up being one of the most practical things a government does."

The past and current agricultural partnerships were developed to mobilize the entire Canadian R&D capacity in order to build the agricultural sector's capability to innovate. This was started in early 2000s by shifting AAFC programs to emphasize downstream applied R&D, industry-led science based on a market-driven funding approach. NRC and granting agencies across Canada have also developed similar industry programs. This has been done, however, at the expense of basic research funding.

In its [Budget Plan 2018](#), the Canadian government proposed investing \$925 million over five years in the three federal granting councils: the [National Sciences and Engineering Research Council](#), the [Canadian Institutes for Health Research and Social Sciences and Humanities Research Council](#). According to the [Canadian Institute for Advanced Research](#), this is "the most new funding for fundamental research through the granting councils to date." The budget also includes investment in the [Canada Research Chairs](#) program, a new international and interdisciplinary research fund, new funding for infrastructure through the [Canada Foundation for Innovation](#), and increased funding for a reenergized

National Research Council. In total, nearly \$4 billion has been committed over the next five years to Canada's research ecosystem." Unfortunately, this 2018 budget did not include new funding specifically targeting agricultural science in general and, especially, to support basic research conducted by AAFC and university scientists. Nevertheless, it is very good news for Canadian science overall

Convergence and shared governance

CAP is unique within the federal family by allowing convergence of voted appropriations to support federal and university scientists working together to achieve agreed-upon project goals, objectives and outcomes for the benefit of the Canadian agri-food sector. In summer 2018, Genome Canada and its network of regional Genome Centres will launch a funding opportunity entitled Large-Scale Applied Research Project Competition: Genomics Solutions for Agriculture, Agri-food, Fisheries and Aquaculture. It is expected that other organisations, such as AAFC, will participate in this competition. In doing so, Genome Canada, a federal Agency supported by vote 10 and the AAFC Science & Technology Branch (supported by vote 1) could join force thereby leveraging each other's assets to support genomic R&D for the benefit of the agri-food sector. This approach would not force the pooling of funds but would require strong commitment to contribute significant funding to selected projects by partners under an appropriate joint governance structure. Hence, the AAFC convergence concept could be replicated for the first time outside AAFC within the federal family.

In conclusion

Greater coordination, better cooperation and the convergence of voted appropriations based on shared strategic goals, priorities and outcomes are best business practices at AAFC in support of R&D and agricultural innovation. From a financial point of view, to mutually leverage each other's assets for maximum impact through the convergence of

actions and resources is a worthy endeavor. This concept of convergence should indeed be replicated within the Canadian federal family and, hopefully, also at the international level.

Nowadays, one might however wonder if there are not too many players at the federal level trying to support agricultural R&D in Canada. Is it time for a system approach where all stakeholders would have access to a single window coordinated by an independent agency such as the Canadian Institutes of Health Research²² does in the field of medicine? Is it time to put our imagination at work and innovate again?

[Link to the notes](#)

From WAAP

Only ONE WEEK!!!



The 12th World Conference on Animal Production (WCAP) is coming! WCAP will be hosted this year in Vancouver on July 5-8 just before the 2018 ASAS-CSAS Annual Meeting.

Thursday, July 5, 2018

- Registration
- Keynote Speaker, Dr. Jennie Pryce (Victoria Agriculture and La Trobe University, Australia): The next genomic revolution through vets and animal scientists
- Reception

Friday, July 6, 2018

Session I - Precision Livestock Farming to increase producers' profitability

- Dr. Ilan Halachmi (Institute of Agricultural Engineering, Israel)
- Dr. Irenilza de Alencar Nääs (Paulista University, Brazil)
- Coffee and Poster Break
- 15 minutes talks (selected from submitted abstracts)
- Dr. Trevor Devries (University of Guelph, Canada): Challenges and opportunities in precision monitoring of dairy cows

Session II - Higher food safety to enhance consumer confidence

- Dr. Herman Barkema (University of Calgary, Canada): Effect of the use of antibiotics in food animals on antibiotic resistance in food animals and humans
- Dr. Amy Pruden (Virginia Tech, United States): Critical Control Points for preventing the spread of antibiotic resistance associated with cattle manure to fresh produce
- Coffee and Poster Break
- 15 minutes talks (selected from submitted abstracts)
- Dr. Uwe Rössler (Free University of Berlin, Germany): The challenge of Antimicrobial resistance on the animal-human-environment interface

Saturday, July 7, 2018

Session III - Challenges and opportunities in animal health

- Dr. Andres Perez (University of Minnesota, United States): Food safety and animal health and production: one health, many challenges, no silver bullets
- Dr. Janice Zanella (Embrapa Swine and Poultry, Santa Catarina, Brazil): Emerging health issues in swine in Brazil
- Coffee and Poster Break
- 15 minutes talks (selected from submitted abstracts)
- Dr. Gregoria Velasco Gil (Virginia Commonwealth University, United States): Contribution of pastoral systems to global food security, trends and challenges

Session IV: Animal well-being challenges for today, opportunities for tomorrow

- Dr. Don Lay (USDA ARS/Purdue University, United States): Intractable animal welfare challenges continue to ramp up pressure on the animal industries. Progress and Opportunities
- Dr. Adroaldo Zanella (University of Sao Paulo, Brazil): The impact of prenatal and neonatal environments for animal welfare
- Coffee and Poster Break
- 15 minutes talks (selected from submitted abstracts)

- Dr. Marina von Keyserlingk (University of British Columbia, Canada): Animal Welfare in the context of social sustainability

- Gala 18:15

Sunday, July 8, 2018

Session V: Genetic improvement in developing countries: mission impossible?

- Dr. Raphael Mrode (ILRI and SRUC/Scotland's Rural College, Kenya and United Kingdom): Developing innovative genomic approaches to livestock genetic improvement in developing countries
- Dr. Yachun Wang (China Agricultural University, China): Challenges and opportunities for genetic improvement of dairy production in China
- Coffee and Poster Break
- 15 minutes talks (selected from submitted abstracts)
- Dr. Alessandra Stella (Parco Tecnologico Padano, Italy): Genomics for farm animal adaptation in developing countries

Session VI: A picture is worth a thousand words - challenges in communication between agriculture and the public

- Dr. Gesa Busch (University of Bozen, Italy): From acceptance to acceptability - opportunities in communication between livestock farming and the public
- Dr. Maria Hötzel (Federal University of Santa Catarina, Brazil): The importance of animal welfare in emerging countries, Brazil as an example

- Coffee and Poster Break

- 15 minutes talks (selected from submitted abstracts)

- Dr. Glynn Tonsor (Kansas State University, United States): Animal welfare discussion in the US - perspectives from an economist

- WCAP Closing Session/ASAS-CSAS Annual Meeting Opening Session (Vancouver Convention Centre)

For more information please visit the [website](#).

Improved version of the WAAP Website

The WAAP website had just reviewed, modernized and with the new version contains additional information useful for our members. There is also a brand new chapter collecting the editorials that were published until now and that will be updated with the new ones that will be published in the future. The graphic aspect is improved although keeping the same "WAAP style". We added more and updated information about next animal science meetings, the collection of the previous newsletters and many links to websites important for animal scientists worldwide.

From WAAP Members

From American Dairy Science Association (ADSA)

The 35th DISCOVER Conference - Effects of Stress on Health and Production in Dairy Cows October 29-November 1, 2018 in Itasca, Illinois

The 35th DISCOVER Conference – "Effects of Stress on Health and Production in Dairy Cows" will be held October 29-November 1, 2018 at

the Eaglewood Resort & Spa in Itasca, IL. There is an increasing recognition within the animal and dairy science community of the complex and dynamic response to stress and the role of immune response in animal productivity and well-being. The conference will concentrate on the activators and consequences of immune activation. Registration is **now open**. Attendance is limited. Also mark in your calendars the 36th ADSA Discover Conference – “Lipids in Dairy Nutrition: From Feed to Milk Fat” that will be held May 28-31, 2019 at the Eaglewood Resort & Spa. For more information please visit the [website](#).

Large Dairy Herd Management (e-book), third editions

Large Dairy Herd Management (e-book), third edition, was composed by a dedicated group of 171 chapter authors, 18 section editors, and 73 external reviewers, under the leadership of Dr. David Beede. It is available for [purchase](#). This edition was developed to help meet the growing information needs of dairy farmers, service professionals, and students worldwide. It brings peer-reviewed dairy science and management information to users in an accessible, easy-to-use format. The e-book includes 97 chapters in 15 sections.

S-PAC – Searchable Proceedings of Animal Conferences

S-PAC, the recorded symposia library, is a very comprehensive animal production and management conference proceeding database. This collection of conference proceedings and presentations is a valuable resource for animal scientists, veterinarians, consultants, and stakeholders of the dairy sector around the world. All are invited to Try S-PAC --- 5 days for \$5! For more information please visit the [website](#).

From American Society of Animal Science (ASAS)

Innovate Conference 2018.

September 9th - 11th 2018, Chateau Elan Winery & Resort in Braselton, Georgia.

The Innovate Conference 2018 “Influencing the Future of Animal-Sourced Foods” will be held in Georgia on 9th – 11th September 2018. Registration is now open! For more information please visit the [website](#).

From Asociacion Latinoamericana de Produccion Animal (ALPA)

ALPA Biennial meeting

The Asociación Latinoamericana de Producción Animal (ALPA) organized the Twenty-sixth meeting from Monday, May 28 to Thursday, May 31, 2018. This edition was host by Ecuador at the Simón Bolívar Convention Centre, Guayaquil. The ALPA Meeting brings together scientists, technicians, students, producers and industrialists of livestock production in Latin America and the Caribbean, with the aim of disseminating the advances of research and studies carried out in the various countries of the continent. The event is a tool to help increase the capacity of Centre and South American countries to learn, teach, assimilate, adapt, generate, transfer, coordinate and share Science and Technology in Livestock Production. Academic activities included plenary lectures by leading scientists, conferences with specific themes, symposiums and poster presentations. Hundreds of participants went to Guayaquil from the Americas and from other continents. EAAP sent two invited speakers, Phil Garnsworthy (UK) and Gesa Busch (Germany). Next ALPA meeting will be held in 2020.

From All Africa Society for Animal Production (AASAP)

AASAP Conference, 15th -19th October 2018, Accra, Ghana

The All Africa Society for Animal Production (AASAP) is an association dealing with science and practice relevant for animal agriculture. These include animal nutrition and feeding, genetics and breeding, health, welfare, and other aspects of husbandry. At the conference to be held in Accra next October there will be a great scientific program planned and, to be delivered with interactive panel discussions, debates, hard talks on hot topics and emerging new patterns in African animal agriculture; as well as social events. Special attention will be given to:

1. Opportunities and prospects for transforming ruminant livestock systems in Africa. [with a special focus on dairying and including the disciplinary areas – genetics/breeding, nutrition/feeding, animal health, and input and output markets]
2. Opportunities and prospects for transforming poultry and pig systems in Africa. [with a special focus on poultry, and including the disciplinary areas – genetics/breeding, nutrition/feeding, animal health, and input and output markets]
3. Working animals – the animal welfare and human livelihood dimensions. [With special attention to the working donkeys and mules in Africa]
4. Delivery of animal inputs and advisory services in Africa – the last mile challenge. [With special focus only on last mile delivery in remote locales]
5. Climate change and animal agriculture – adaptation and mitigation opportunities and prospects in animal agriculture [Focus on implications for different ecologies and the more vulnerable production systems in Africa]

6. Capacity development and partnerships for innovations in animal agriculture

7. Data platforms for decision-making in animal agriculture.

The overall objective of the conference is to provide an opportunity for scientists and the broader stakeholders in the animal agriculture sector to discuss the potential role of innovation in animal agriculture to improve the livelihoods of Africans. The broad objective of the conference will be met through discussions of a series of papers, organized under sub-themes, to answer the broader question: *“How can Africa organize itself to address challenges and, at the same time, take advantage of opportunities presented by a globalizing world?, Specifically, what are the technical and institutional innovations from the global North and South, which Africa can take advantage of, and the best mechanism through which such approach could be achieved.”*

From European Federation Animal Science (EAAP)

Dubrovnik is waiting to host animal scientists!

The 2018 EAAP annual meeting will be held in Dubrovnik (Croatia), the pearl of the Adriatic Sea. The number of participants is estimated to be around 1400, much more than expected, likely this is due to the high level of scientific program and for the attractiveness of the location, and the good job done by local host. There will be in fact 71 outstanding scientific sessions, with important topics in the traditional fields: nutrition, genetic, physiology, etc. But also, some sessions dedicated to young scientists, the industry and topics related to the new Study Commissions, like Precisions Livestock Farming Study Commission and the Insects SC. The definitive program will be produced soon but you can find more information about Dubrovnik on the [website](#). Registrations are already open!

2018 EAAP Annual Meeting Plenary Session

The major scientific award, the “Leroy Award will be given in 2018 to Imke De Boer, Professor of Animal Production Systems from Wageningen University and Research (WUR). She will deliver a lecture at the Plenary Session of 2018 Annual Meeting. The rest of the Plenary Session title will be: “Food 2030: what type of animal science and livestock industry will be necessary?”. The topic is extremely interesting and we believe that all animal scientists who will be present at the EAAP annual meeting, will appreciate the selection of the highly qualified speakers: Badi Besbes (FAO), Rudolf Preisinger (Lohmann Tierzucht, Germany), Massimiliano Pasqui (CNR, Italy) and Daniel M. Weary (University of British Columbia, Canada).

News from Science

MSc in Biology & Technology of Reproduction in Mammals (2018-2019) Murcia University, Spain

This MSc has been Officially Accredited by the Spanish Education Minister and is aimed at delivering specialists in Biology & Technology of Reproduction with a scientific or professional (human or veterinary) profile. Pre-registration is open until **13th of July**.

For more information and contact please visit the [website](#).

Black soldier fly can benefit poultry farmers, environment

Incorporating black soldier fly larvae into feed has the potential to reduce the environmental costs of poultry production as well as cut feed prices, according to newly published East African research. Scientists from the Kenya Agricultural and Livestock Research Organisation Poultry

Research Unit examined whether fly larvae could replace soybeans or fish meal as a protein source in commercial poultry feed. Read the full article on [PoultryWorld](#).



News from Industry

6th UIA Associations Round Table Asia-Pacific – 26th – 27 th September 2018 Kuala Lumpur, Malaysia and 12th UIA Associations Round Table Europe - 15th -16th November 2018 Lyon, France

UIA invites to send delegates to the two Associations Round Tables will be held in Kuala Lumpur (Malaysia) and Lyon (France). For more information and registration please visit the website. Registration for the Round Table is limited to associations with profiles in the Yearbook of International Associations, Associate Members or other invited guests.

When do cows have the need to huddle? – Expert Opinion

Cows like to huddle. But why do animals do this? And why especially in the summer? In this blog, I explain more. Every summer, we get questions from around the world on 1 particular topic. Farmers ask: “Our cows huddle together on a specific moment of the day (around noon) in a certain area of the barn and won’t move.” This behaviour also stops at the same

hour every day at the end of the afternoon. It also disappears in the fall, when the temperature drops. Read the full article on [DairyGlobal](#).



A 5 step guide on how to assess plant extracts

Pancosma has developed a guide with 5 steps to evaluate phytomolecules based products. This guide aims to help final users learn more about how to differentiate products and how to assess their quality and efficacy. The interest for phytomolecules in animal diets is increasing, fuelled by global efforts to reduce in-feed antibiotics and to promote gut health in livestock animals. But what determines a good plant extract and/or essential oil? Read the full article on [AllAboutFeed](#).



Job Offers

3 Scientific career positions in physiology, nutrition and disease prevention of monogastric animals and 1 Associate Professor, or Senior Scientist, in Immunological Methods and Immune System of Production Animals at Aarhus University, Denmark

If you are interested, please visit the following links:

[3 Scientific career positions](#)
[Associate Professor/ Senior Scientist](#)

Junior Research Fellow or Research Fellow in Statistical Genetics School of Environmental and Rural Science at University of New England, Armidale, Australia

As a successful applicant at Junior Research Fellow level you must have experience with statistical analysis of quantitative genetic models, understanding of and experience with bioinformatics tools for analysis of genomic data and a record of research achievement. You will also have experience in computer programming.

At a Research Fellow level we expect an extensive experience with statistical analysis of quantitative genetic models, a high level of experience in computer programming and a strong record of research achievement.

- 2.5 year fixed term, full-time
- Deadline for application 15th July 2018

To discuss this role please contact Professor Julius van der Werf, phone +61 02 67732092 or email: jvanderw@une.edu.au. For further information please visit the [job vacancy](#).

Postdoc Position in Multiomic Prediction of Oat Seed Composition at Cornell University, Ithaca, NY, USA

The position is in the Plant Breeding and Genetics Section at Cornell University and is part of a USDA Agriculture and Food Research Initiative grant to breed more nutritious oat.

Term is one-year renewable to three years contingent on performance and continued funding. Position Requirements: Ph.D. in plant biochemistry or metabolomics with experience or interest in breeding applications, or Ph.D. in plant or animal breeding with emphasis on biochemistry, metabolomics, nutritional science. Proven scientific writing ability and communication skills.

Deadline: 31st July 2018

For more information and application please visit the [job vacancy](#).

Publications

I. [Large Dairy Herd Management](#) (e-book), third edition, now available [for purchase](#). It brings peer-reviewed dairy science and management information to users in an accessible, easy-to-use format. The e-book includes 97 chapters in 15 sections.

2. New technical articles have been recently published on Engormix:

I. **“Artificial Insemination: Troubleshooting to Improve Fertility”** (<https://en.engormix.com/poultry-industry/articles/artificial-insemination-troubleshooting-improve-t42110.htm>);

II. **“Nutritional tool to safeguard egg quality”** (<https://en.engormix.com/poultry-industry/articles/nutritional-tool-safeguard-egg-t42063.htm>);

III. **“Fibre”: necessary paradigm shift in pig feeding”** (<https://en.engormix.com/feed-machinery/articles/fibre-necessary-paradigm-shift-t41685.htm>)

IV. **“Minimize heat stress to maximize milk production and quality”** (<https://en.engormix.com/dairy-cattle/articles/minimize-heat-stress-maximize-t40894.htm>);

Meetings and Conferences

[July 5th-8th, 2018, in Vancouver, Canada](#)

[12th World Conference on Animal Production](#)

The 12th World Conference on Animal Production will be held in July 5-8 at the Westin Bayshore Vancouver. The meeting will be followed by the 2018 ASAS-CSAS Annual Meeting & Trade Show that will be held always in Vancouver in July 8-12. For more information please visit the [website](#).

[July 8th-12th, 2018, in Vancouver, Canada](#)

[2018 ASAS-CSAS Annual Meeting & Trade Show](#)

The [American Society of Animal Science \(ASAS\)](#) and the [Canadian Society of Animal Science \(CSAS\)](#) will hold the 2018 ASAS-CSAS Annual Meeting & Trade Show in Vancouver, Canada. The meeting will be held in July. We have three main goals for the 2018 meeting: 1) to present high quality, relevant science that links animal science and animal agriculture, 2) to return to our roots, by having a number of social events to enhance networking and add a family feel to the meeting and 3) to continue to provide a successful and sustainable meeting model. For more information and registration please visit the [Annual Meeting website](#).

August 1st-3rd, 2018, In Kuching Sarawak, Malaysia**18th AAAP Animal Science Congress**

The 18th Asian Australasian Animal Production Science Congress will be held in Kuching Sarawak, Malaysia. The host of the 2018 congress is MSAP (Malaysian Society of Animal Production). The organizing committee was launched already in early 2016 and now in vivid action. It is expected to have more than 1,000 registrants representing 30~40 countries along with about 800 scientific presentations. Please remember the date and venue city, which is one of the well-known tourist attraction cities in Malaysia. For further information please refer the official homepage of the 2018 AAAP Animal Science Congress .

August 25th – 26th, 2018 in Dubrovnik, Croatia**BOLFA workshop 2018**

The Biology of Lactation in Farm Animals workshop will be held in Dubrovnik on August 25/26 during the weekend right before the 69th EAAP Annual Meeting. There are 5 sessions, each with invited speakers and submitted papers: 1. Mammary development, 2. Regulation and manipulation of milk secretion at different stages of lactation, 3. Alternative to the 305-d lactation, 4. Old and new indicators in milk for health status and metabolic load, 5. New developments in milking routines. For more information: <http://www.eaap.org/bolfa/>

August 27th - 31st, 2018 in Dubrovnik, Croatia**69th EAAP Annual Meeting (EAAP 2018)**

The Organising and the Scientific Committees are delighted to announce that Croatia has been chosen as the venue for the 69th Annual Meeting

of the European Federation of Animal Science. The meeting will take place from 27th to 31st August 2018 in Dubrovnik, one of the most prominent tourist destinations in the Mediterranean. The venue for the meeting will be the Valamar Resort. EAAP 2018 builds on the success of previous EAAP meetings, and it will provide an excellent opportunity for scientists working with a wide range of animal species and in related disciplines to meet and discuss the latest developments in animal sciences. For registration and other information about the European animal science annual meeting, please visit [EAAP 2018 website](#). Early Registration to the 69th EAAP Annual Meeting is now open!

September 2nd -6th, 2018, in Clermont-Ferrand, France**10th International Symposium on the Nutrition of herbivores**

The International Symposium on the Nutrition of Herbivores (ISNH) is an international scientific conference that addresses a whole range of issues linked to the nutrition of herbivores in production systems or in the wild. The 10th edition will be hosted by the French National Institute for Agricultural Research (INRA) in Clermont-Ferrand, France. The 10th International Symposium on the Nutrition of Herbivores conference will be a forum to discuss herbivore nutrition supporting agro-ecological and sustainable intensification approaches. The Symposium will feature plenary sessions, paper sessions, and posters by international experts. The sessions of the Symposium will cover basic herbivores nutrition to nutritional strategies to improve nutritional efficiency, product quality, health and animal welfare, and environmental issues. Contributions from young scientists are encouraged. For further information and the paper submission procedure please visit the [website](#).

September 5th-7th, 2018, in Utrecht, The Netherlands**6th European Veterinary Immunology Workshop**

The European Veterinary Immunology Group (EVIG) and the local organizing committee are organising the 6th EVIW, EVIW2018 in Utrecht, The Netherlands.

Plenary and concurrent session topics will include: 1. Innate immunity, 2. Adaptive immunity, 3. Infection and immunity, 4. Vaccination, 5. Clinical immunology, 6. Allergy, 7. Mucosal immunology, 8. The microbiome in relation to immune responses. Further information on registration, abstract submission and deadlines please visit the [website](#).

September 9th -11th 2018, Chateau Elan Winery & Resort in Braselton, Georgia.**Innovate Conference 2018**

The Innovate Conference 2018 “Influencing the Future of Animal-Sourced Foods” will be held in Georgia on 9th – 11th September 2018. Registration is now open! For more information please visit the [website](#).

September 12th -14th, 2018, Davis, California, USA**Symposium 50th Anniversary of the California Net Energy**

The 50th Anniversary of the California Net Energy Systems Symposium will be held on the UC Davis campus, September 12-14, 2018. This symposium builds on the pioneering work of Professors Lofgreen and Garrett who published their system in the Journal of Animal Science in 1968. For more information please visit the [website](#). Registration at the following [link](#)!

September 13th –15th, 2018, in London, United Kingdom**17th World Congress on Nutrition and Food Chemistry**

The 17th World Congress on Nutrition and Food Chemistry will focus on “*Exploring New Dimensions in Nutrition and Food Science*”. Nutrition and Food chemistry 2018 is planned to offer a prominent opening to the experts in the field of Nutrition and Food Sciences to discuss latest research and challenges in the meadow. The companies dealing with nutritional products and supplements can exhibit their products in the Nutrition exhibition and expo. For more information please visit the [website](#).

September 18th –19th, 2018, Bonn, Germany**One Health & Food Safety Congress 2018**

The One Health & Food Safety Congress 2018 will be held on 18th-19th September 2018 at the University of Bonn. The main aim of the Congress is to bring together scholars, researchers, educators, students, professionals and other groups from different disciplines to present their works in this academic platform. Deadline for Abstract submission 31st March 2018. For more information and deadlines please visit the [website](#).

September 21nd –24th, 2018, Rome, Italy**ISES 14th Equitation Science Conference**

The Conference “Equine welfare: good training, good feeding, good housing, good mental state, good health, good behavior” will be held on 21st-24th September in Rome. The conference is held remembering the 150 from the birth of Caprilli who patent the concept of lightening the seat and “giving” the reins to the horse while jumping which

revolutionised equitation. Go along to the [website](#) for more information and registration.

September 26th-28th 2018, Smolenice, Slovakia

26th Animal Science Days Conference

The 26th Animal Science Days conference will be held in Slovakia, in the Smolenice Castle on 26th-28th September 2018. The papers must be of high scientific quality and respect the instruction for authors, otherwise they may be accepted only for the poster. For more information please visit the [website](#) or read the [leaflet](#).

October 1st-2nd 2018, Ancona, Italy

1st Workshop on Metrology for Agriculture and Forestry

The “1st Workshop on Metrology for Agriculture and Forestry” will be held in Ancona, Italy, on 1st -2nd October 2018. The event will be organised by ASPA – the Association for Animal Science and Productions – in collaboration with others. For further information please visit the [website](#).

October 15th –19th, 2018, in Accra, Ghana

7st All Africa Conference in Animal Agriculture

The All Africa Society for Animal Production (AASAP) is an association of individuals, groups and institutions which have interest in the art, science and practice of animal sciences relevant for animal agriculture. These include animal nutrition and feeding, genetics and breeding, health, welfare, and other aspects of husbandry. The AASAP is a member of the World Association of Animal Production (with its secretariat in Rome). The theme of the 7th AACAA – to be held in Ghana from October 15 to 19, 2018 – is: Innovations to Harness the Potential of African Animal Agriculture in a Globalizing World. The key words in this theme

are secure future, innovations and globalizing world. For more information and registration please visit the [website](#).

October 16th –19th, 2018, in Mar del Plata, Argentina

41st Argentine Congress of Animal Production

The 41st Argentine Congress of Animal Production will be held in October 16th -19th 2018, in Mar del Plata in Argentina. The Congress will be organised by AAPA. The abstract can be submitted in Spanish or English. If interested, please submit it to: eeabalcarse.aapa@inta.gob.ar and eeabalcarse.rapa@inta.gob.ar

For further information and for abstract submission please see the [website](#).

October 22nd –25th, 2018, Rabat, Morocco

46th meeting of the Francophone Society of Chronobiology (SFC)

The 46th meeting of the Francophone Society of Chronobiology (SFC) will be held for the first time in Africa in Rabat, the capital of Morocco and one of the four imperial cities of the Kingdom. The meeting will take place on October 22-25, 2018 at the Hassan II Agronomy and Veterinary Medicine Institute. For Registration and abstracts submission please visit the [website meeting](#).

October 23rd –27th, 2018, in Mumbai, India

19th World Congress of Food Science and Technology

The 19th World Congress of Food Science and Technology will be held in October 23rd -27th 2018, at CIDCO International Convention Centre, in Mumbai in India and the theme will be "25 Billion Meals a Day by 2025 with Healthy, Nutritious, Safe and Diverse Foods". The target highlights about 250 plus internationally well-known speakers of high repute along with special Plenary talks and 60 plus Scientific sessions and more than 800 poster presentations with a spectrum of about 3000 plus delegates. For more information and registration please visit the [website](#).

October 25th – 27th, 2018, in Osijek, Croatia

International Scientific-Expert Conference on the Preservation of Animal Genetic Resources

The conference is organized by the Croatian Agricultural Agency, the University of Zagreb, the Josip Juraj Strossmayer University of Osijek and the University of Zadar. It provides the possibility for verbal presentation, presentation via posters and the presentation of your institution/company or as a participant.

For further information, please read the [first notification of the conference](#) and visit the [conference website](#).

October 29-November 1, 2018 in Itasca, Illinois

35th DISCOVER Conference - Effects of Stress on Health and Production in Dairy Cows

The 35th DISCOVER Conference – “Effects of Stress on Health and Production in Dairy Cows” will be held October 29-November 1, 2018 at the Eaglewood Resort & Spa in Itasca, IL. The

conference will concentrate on the activators and consequences of immune activation. Registration is **now open**. Attendance is limited.. For more information please visit the [website](#).

November 8th -9th, 2018, in Torremolinos-Malaga, Spain

Food Factor Conference

The Food Factor Conference will offer an excellent opportunity to learn and discuss about the latest research results, insights, advances in the field of food science. Deadline for early registration 18th July 2018. Deadline for abstract submission 10th (oral presentation) and 17th (poster and virtual presentation) September 2018. For more information please visit the [website](#).

November 27th -29th, 2018, in Alexandria, Egypt

1st International Conference on Animal Genetic Resources Conservation in Africa and Asia

The 1st International Conference on Animal Genetic Resources Conservation in Africa and Asia will be held in November 27th-28th 2018 at the University of Alexandria, Egypt. The conference main theme will be: "Towards a rational conservation strategy for animal genetic resources for food and agriculture in Africa and Asia". More information will be available soon.

June 27th -29th, 2019, in Bern, Switzerland

17th International Conference on Production Diseases in Farm Animals

The ICPD conference is a traditional scientific conference dedicated to current topics related to farm animal diseases that are related to the respective food production systems. The conference has the overall goal to contribute to

improve sustainability in animal food production. Presentations from expert scientists from all over the world will cover field of animal husbandry, physiology, genetics, nutrition, welfare, and herd health management, as well the interactions among these disciplines. Species will include ruminants, swine, and poultry. The ICPD 2019 will be held at the University of Bern, Switzerland. Bern is the capital of Switzerland and also a unique touristic attraction with its beautiful historic old town which is a UNESCO World heritage site. For more information please visit the [website](#). Chair of organizing committee: Prof. Rupert Bruckmaier, Veterinary Physiology, Vetsuisse Faculty, University of Bern. For more information check the [conference website](#) or contact us at icpd2019@vetsuisse.unibe.

August 26th – 30th, 2019 in Ghent, Belgium

70th EAAP Annual Meeting (EAAP 2019)

The Belgian organizing team is delighted to invite you to the 70th Annual Meeting of EAAP. The meeting will take place from 26th–30th August 2019 in the historic yet contemporary city of Ghent. With its central location in Europe, between Amsterdam, Paris, London and the Ruhr Area, Ghent is easy to reach. The meeting will be organized by ILVO (Flanders' research institute for agriculture, fisheries and food), under the patronage of the Department of Agriculture and Fisheries from the Flemish Government and will offer a platform for livestock scientists to meet and discuss the latest developments in animal science with colleagues from other research institutes and industry from all over the world. Besides, there will be an attractive and interesting program of social events, as well as technical tours and an accompanying person program, in order to enjoy some of the beauties and delicacies Belgium offers. For more information, please visit [EAAP 2019 website](#).

September 3rd– 6th, 2019 in Leipzig, Germany

International Symposium on Ruminant Physiology



The Symposium about Ruminant Physiology will be held in Germany in 2019 at the Kongresshalle am Zoo of Leipzig. The Symposium is the major international conference on ruminant physiology. It provides an overview of current, important scientific findings and areas of research in the physiology of ruminants of all kinds. For more information, please visit the [symposium website](#).



The **World Animal Science News** is the Official WAAP Newsletter. This interesting update about activities of the global animal science community presents information on leading research institutions in the entire world and also informs on developments in the industry sector related to animal science and production. The Newsletter is sent to all WAAP member organizations and to their associates. You are all invited to submit information for the newsletter. Please send information, news, text, photos and logo to waap@waap.it.

WAAP Secretariat is located at the following address: Via G. Tomassetti 3, A/I - Rome (Italy). Tel.: +39-06-44 20 26 39;
E-mail: waap@waap.it

Production staff: Marlène Sciarretta, Jim Sartin, Andrea Rosati, Eleonora Azzaro.

Graphics design and layout: Gianfilippo Ercolani.