2004 Annual Report

Alberta Agricultural Research Institute


NRIA
NRIC
1λ DNA
1λ XbaI
1λ EcoRI
Buffer #2
2λ EcoRI Buffer
BSA
16λ dH20
LB
PREP QUANTITATION
SAMPLE OD260 260/280 mg/ml
NRIA/pRK5 0.567 1.87 1.42 *
NRIC " 0.545 1.91 1.36
NRIA/Q847E 0.652 1.82 1.63
Q847E 0.495 1.90 1.24
L850 0.633 1.80 1.58
NRIA/pMAA 0.773 1.80 1.73
GlnB6/pRK5 0.510 1.72 1.28
GlnB1 0.520 1.86 1.30
GlnB2 0.155 1.67 0.388
GlnZ 0.468 1.75 1.17 *
TTRK/pBA 0.353 1.74 0.895
* dilute to 1 mg/ml
Sample OD260 260/280 mg/ml
NRIC Q847E 0.528 1.98 1.32
M848E 0.627 1.95 1.57
Q849E 0.593 1.99 1.48
L850 0.576 2.19 1.44
Digests 2 hours 37°C
NRIA Q847E, 6 NRIC Q847E, NRIC M848E
1λ DNA
1λ EcoRII
NRIA
1λ DNA
1λ XbaI
NRIC
1λ DNA
1λ EcoRI
NRIA L850E
1λ DNA
1λ HindIII
NRIA Q849E
1λ DNA
1λ SacII
Res Enzymes tech
XbaI
EcoRI
MfeI EcoR
MfeI EcoI
HindIII
SacII
EcoRI/X6
0
1
2
3
4
5
6
7
8

The Alberta Agricultural Research Institute (AARI) is an institute established under the Alberta Science and Research Authority Act (ASRA) and is part of the Ministry of Innovation and Science (INNSCI). AARI is the primary agency for funding, facilitating and coordinating strategic agricultural research and development for the province.

RESEARCH AND DEVELOPMENT IS THE KEY TO SUSTAINABLE GROWTH

TABLE OF CONTENTS

MESSAGE FROM THE HONOURABLE RALPH KLEIN, PREMIER OF ALBERTA

On behalf of the Government of Alberta, I am pleased to extend greetings in the Alberta Agricultural Research Institite's (AARI) annual report.

Over the past 100 years, Alberta's first century, the agriculture industry has played a vital role in the growth and development of this province. Looking ahead, there is every reason to believe that agriculture can continue to be one of Alberta's most important economic engines.

The global agricultural market is changing. New competitors are emerging, consumer demands are shifting, and science is introducing exciting new possibilities. For Alberta to remain successful, we must keep pace with the times and be innovative in our thinking.

In this important mission, the contribution of AARI is fundamental. Working with a range of partners, including members of the Agriculture Funding Consortium, AARI has placed the province's financial backing behind many promising agricutural research development projects. These projects will make a valuable contribution to Alberta's ongoing development as a leader in agricultural research.

Best wishes to AARI for continued success in the future.

Honourable Ralph Klein
Premier of Alberta

MESSAGE FROM THE MINISTER OF INNOVATION AND SCIENCE

The mandate of Alberta's Ministry of Science and Innovation is three-fold:

- to provide strategic leadership for science and research and development in Alberta
- to manage and fund investments in science and research and development in three priority areas: energy research, information and communications technology, and life sciences
- to facilitate technology commercialization and development to build knowledge-intensive industries in Alberta.

Within the priority area of life sciences, agricultural research and development is a crucial element. By building on Alberta's historic strengths in agriculture, and adding new energy through innovative research and development, we can keep Alberta on the world map in this field. To do so will benefit farmers, agribusiness and all the people of Alberta.

As you review the Alberta Agricultural Research Institute annual report, I'm sure you'll appreciate both the volume and quality of agricultural research and development taking place in Alberta. This is just the very beginning of what we can accomplish in the years ahead.

Hon. Victor Doerksen
Minister of Innovation and Science

Alberta
INNOVATION AND SCIENCE

MESSAGE FROM THE CO-CHAIRS

Over the past few years, Alberta's agriculture and food industry has learned some painful lessons. BSE has taught us that we cannot largely depend on others to add value to our products. Low crop prices have shown us how exposed we are to market forces beyond our control.

What's the answer? Alberta Agriculture, Food and Rural Development has set an ambitious target for 2010: $10 billion in sales by primary agriculture, and $20 billion in value-added activity.

Achieving this goal will demand a new mindset. No longer can we think of agriculture simply as a provider of raw materials.

We need to find new ways to add economic value to the crops we grow and the livestock we raise. This will require a large investment - both financial and intellectual - in research and development.

This is a complex and, at times, a daunting task. Competitors in the United States, Europe and Asia share our ambitions of prosperity in the agriculture and food industry of the 21st century. Many of these competitors have deep pockets and tremendous expertise.

How can Alberta win? In a word – focus. The Alberta Agricultural Research Institute (AARI) is focused on contributing leadership, facilitation and funding to Alberta's agricultural R&D challenge.

As the lead agency coordinating Alberta's agricultural R&D strategy, AARI and our partners know we can't do everything. Of the many promising areas of agricultural research and development we are focusing on three: Sustainable Production, BioProducts, and Health and Wellness.

Many groups in Alberta make contributions - financial and otherwise - to agricultural R&D. Individually, we lack the financial strength to compete against formidable global competitors. By working and funding together, as we do through the 14-member Alberta Agriculture Funding Consortium, we increase our ability to fund difference-making research.

In this annual report, you'll find information on AARI-supported success stories in areas as diverse as poultry product utilization, bioplastics, beta glucan extraction from barley and oats, and livestock genomics. The strategic work carried out by the poultry industry, in particular, shows great promise as a model for product development in other agricultural sectors.

As people who work in and care about agriculture, the task before us will be difficult. Building on the good work performed by AARI and our many partners in 2004, we are confident that we can succeed. AARI will continue to work closely with Alberta's agricultural research and development sector to ensure the long-term sustainability of our industry.

We thank our Board of Directors for their guidance, our partners for their commitment, our staff for their hard work and the agricultural producers of Alberta for their faith in the future.

Art Froehlich
Industry Co-Chair

Barry McFarland
MLA Co-Chair

MESSAGE FROM THE MANAGING DIRECTOR

The goal of Alberta's agricultural R&D strategy is to assist in the development of a sustainable value-added industry. Such a development would increase wealth in Alberta generally, create opportunity for producers and reduce their vulnerability to volatile world markets.

Over the course of the past year, AARI and members of the Agriculture Funding Consortium funded a wide variety of innovative projects that materially advance the province's R&D strategy. You'll find a complete list of these projects, beginning on page 13 of this report, divided into our three priority areas: Sustainable Production, BioProducts and Health and Wellness.

We've also provided an opportunity for you to take a look inside selected projects that we believe are particularly illustrative of AARI's approach to business. When these projects are considered as a whole, they represent a valuable portfolio of ideas, technologies and strategies that can make a real difference in Alberta.

In 2004, as always, the contribution of AARI's staff has played a key role in our success. Looking to 2005 and beyond, I am confident that AARI is taking the right approach to help create a stronger agriculture industry for future generations of Albertans.

Alan Hall
Managing Director

AARI BOARD OF DIRECTORS

- **Barry McFarland** - MLA Co-Chair
- **Art Froehlich** - Industry Co-Chair
- **Dr. Pete Desai** - Vice Chair
- **Harry Haney**
- **Dr. Mark Redmond**
- **Dr. Rob Rennie**
- **Tom Towers**
- **Henry Vos**

Ex-officio:

- **Bob Fessenden** (Deputy Minister, Alberta Innovation and Science)
- **Brian Rhiness** (Assistant Deputy Minister, Alberta Agriculture, Food and Rural Development)

AARI STAFF

Alan Hall
Managing Director

Freda Molenkamp
Director, Sustainable Production and Food
Leader, Programs and Partnerships

Connie Phillips
Director, Health and Wellness

Derek Parker
Director, Strategic Investment

Marilyn Johnstone
Research Officer

Joan Unger
Program Coordinator

Marian Parslow
Program Administrator

LEADERSHIP

AARI is taking the lead in examining and establishing priorities for Alberta's agricultural R&D sector.

Agricultural R&D is a large, complex endeavor that involves many and varied players: governments, producers, academia, agribusiness and others. A central element of Alberta's strategy for agricultural R&D is that AARI will take the lead and enable the participation of groups relating to pork, poultry, dairy and other sectors. By working closely together, with AARI leading the process, these groups develop practical, integrated action plans built around pressing R&D priorities.

On a global level, the resources available to R&D players in Alberta are relatively small. This makes it important to not try to be all things to all people. Rather, with AARI's leadership, Alberta's strategy for agricultural R&D has set three investment priorities where Alberta enjoys a comparative advantage.

1. Sustainable Production and Food

Crop and livestock production are the foundation upon which Alberta's value-added industry is built. By having a strong base in crop and livestock production, the BioProducts and Health and Wellness opportunities can be realized most effectively.

Crops: nutrient efficient cropping systems; disease and pest management; crop product diversification through new crops and processing technologies; plant genetics

Livestock: nutrient management systems for the feed/livestock interface including net feed efficiency; animal genomics and proteomics; animal welfare; food safety; microbial management system for livestock production

2. BioProducts

- biomaterials/biopolymers
- bio-energy/fuels and co-generation
- biochemicals (including lubricants, cosmetics, and resins)

3. Health and Wellness

- conversion of commodity products to market/output trait-based products, capturing higher value and greater functionality
- health and nutritional properties of agribased foods
- increased functionality of agribased food and non-food products
- fresh meat technology and quality, and processed meat products

FACILITATION

The Alberta Agriculture Funding Consortium provides a one-stop funding source for agricutural R&D players, along with a crucial communications function.

The Alberta Agriculture Funding Consortium was created in 2001 to provide a single-window approach to funding for agricultural research and communications in the province.

The Consortium grew out of a realistic assessment of investable R&D resources in Alberta. Working separately, the founders doubted their ability to make a lasting impact. Working together, they knew their likelihood of success would be greatly increased.

The Consortium's mission is to ensure that available R&D funding is targeted, strategic and available. The 14-member organization acts as a criteria management system, and single source of contact, with regard to R&D funding. This ensures that researchers spend less time applying for funds, and more time performing their essential work.

The Consortium currently provides funding in three priority areas - Sustainable Production, BioProducts and Health and Wellness - with projects relating to:

- functional foods and nutraceuticals
- crop and livestock genomics
- bio-energy
- integrated crop and pest management
- greenhouse gas reductions and offsets
- animal diseases - diagnostics, treatment, and prevention
- bio-fibres and biopolymers
- value-added products (crops and livestock)
- crop/livestock/human interface issues.

In 2004, the Alberta Agriculture Funding Consortium invested a total of more than $15 million in strategic R&D funding, of which 45% was derived from AARI. By working together, Consortium members were able to leverage funding by a ratio of 2 to 1. Over the past three years, the Consortium has invested a total of more than $41 million, of which AARI contributed 49%.

CONSORTIUM MEMBERS

Sitting from left to right: **Jack Moerman** - ALIDF, **Cam Klapstein** - ACIDF, **Neal Oberg** - AARI, **Bob Christie** - ALIDF, **Marvin Nakonechy** - ACIDF. Standing from left to right: **Ross Bricker** - AVAC, **Alan Hall** - AARI, **Doug Walkey** - ACIDF, **Freda Molenkamp** - AARI, **John Christensen** - Ag & Food Council, **Bill Buchta** - DLFOA, **Darcy Fitzgerald** - ALIDF.

Alberta Agriculture Funding Consortium members

Agriculture and Food Council (AFC)

Alberta Agricultural Research Institute (AARI)

Alberta Crop Industry Development Fund (ACIDF)

Alberta Livestock Industry Development Fund (ALIDF)

Diversified Livestock Fund of Alberta (DLFOA)

AVAC Ltd.

Associate Members

Alberta Barley Commission (ABC)

Alberta Canola Producers Commission (ACPC)

Alberta Chicken Producers (ACP)

Alberta Egg Producers

Alberta Milk Producers

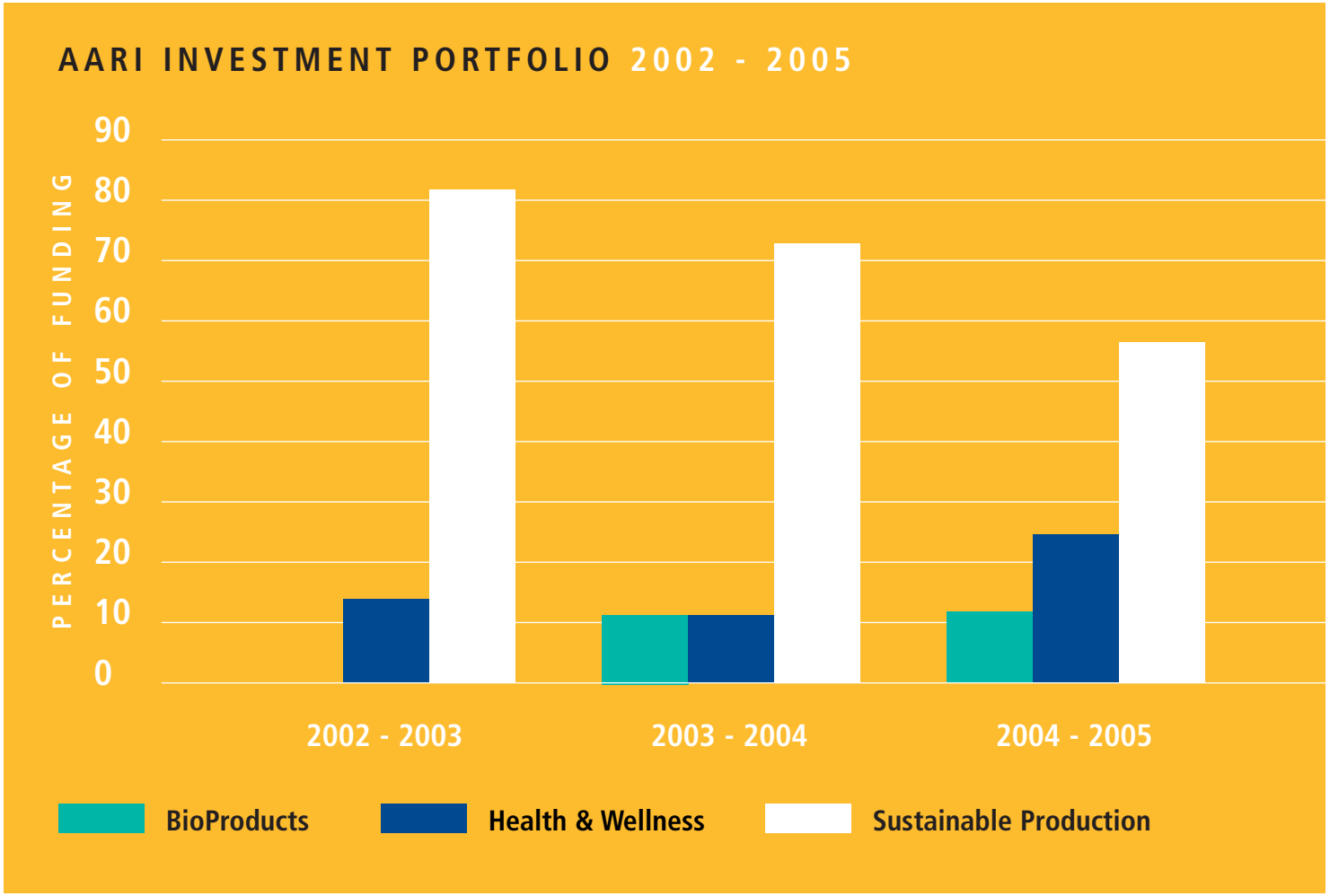
Alberta Pork

Alberta Pulse Growers (APG)

Climate Change Central (CCC)

Facilitating communication

One of the greatest challenges of getting new R&D off the ground is ensuring that all players know what's going on. The Alberta Agriculture Funding Consortium addresses this challenge in a number of ways, including the *Reach & Discover* magazine, that is published twice annually.


AARI INVESTMENT PORTFOLIO 2002 - 2005
PERCENTAGE OF FUNDING
90
80
70
60
50
40
30
20
10
0
2002 - 2003
2003 - 2004
2004 - 2005
BioProducts
Health & Wellness
Sustainable Production

FUNDING

Over the past three years, AARI has developed an investment portfolio that is increasingly balanced among the three priority investment areas: Sustainable Production, BioProducts, and Health and Wellness. The initial weighting toward Sustainable Production reflected AARI's conviction that a strong production sector would also enable the long-term success of BioProducts and Health and Wellness. The increasing availability of investment-grade BioProducts and Health and Wellness projects has allowed AARI to increase funding toward these areas. The chart on page 12 illustrates the evolution of AARI investments over the past three years.

AARI, in partnership with members of the Alberta Agriculture Funding Consortium and other industry and government partners, funded the following projects in 2004.

SUSTAINABLE PRODUCTION

Conventional and Chemical Free Control of Potato Late Blight and Colorado Potato Beetle
Agriculture and Agri-Food Canada
Dr. Qin Chen

Risk of Bluetongue Transmission in Western Canada Following Importation of U.S. Feeder Cattle
Agriculture and Agri-Food Canada
Dr. Tim Lysyk

Gene Flow in Rumen Bacteria and its Implications for GM Foods
Agriculture and Agri-Food Canada
Dr. Tim McAllister

The Effects of Monensin and Tylosin on the Fecal Shedding of E. coli 0157:H7 by Cattle
Agriculture and Agri-Food Canada
Dr. Tim McAllister

Irrigated Cropping Systems for Sustainable Management
Agriculture and Agri-Food Canada
Dr. Frank Larney

Characterization and Integrated Cultural and Chemical Control of Ascochyta Blight of Chickpea
Alberta Agriculture,
Food and Rural Development
Dr. Kan-Fa Chang

SUSTAINABLE PRODUCTION PROJECTS CONTINUED

Managed Pasture Systems that Reduce Risk
Alberta Agriculture, Food and Rural Development
Dr. Vern Baron

Barley Resistance Mechanisms to Fusarium Head Blight
Alberta Agriculture, Food and Rural Development
Dr. Kequan Xi

Development of Tools for Predicting and Managing Phosphorus Losses from Agricultural Land in Alberta
Alberta Agriculture, Food and Rural Development
Dr. Barry Olsen

Development of Novel Screening Methods for Seed Dormancy in Barley
Alberta Agriculture, Food and Rural Development
Dr. Jennifer Zantinge

Near Infrared Reflectance Spectorscopy (NIRS) within a Grain Classification, Valuation, and Quality Determination Platform
Alberta Agriculture, Food and Rural Development
Dr. James Helm

Livestock Odour Control Technology Assessment and Development
Alberta Agriculture, Food and Rural Development
Mr. Ike Edeogu

Improving Dairy Herd Fertility: An Objective Assessment of Reproductive Efficiency - A Benchmark study
Alberta Agriculture, Food and Rural Development
Dr. Divakar Ambrose

Integrated Management of Cabbage Seedpod Weevil in Canola
Alberta Agriculture, Food and Rural Development
Dr. Lloyd Dosdall

Economic and Welfare Comparison of Three Different Group Housing Systems for Gestating Sows
Alberta Agriculture, Food and Rural Development
Dr. John Church

Improved Genetic Resistance to Mycosphaerella Blight of Field Pea
Alberta Research Council
Dr. Sheau-Fang Hwang

Monitoring and Controlling Fusarium Wilt of Canola
Alberta Research Council
Dr. Ralph Lange

Integrated Crop Management of Black Currants
Alberta Research Council
Dr. Kenneth Fry

Commercialization of Net Feed Efficiency for Beef
Alberta Agriculture, Food and Rural Development
Dr. John Basarab

Surveillance of Antimicrobial Resistant Foodborne and Indicator Bacteria in Alberta Feedlots
JVD Veterinary Service
Dr. Joyce Van Donkersgoed

Molecular Techniques for the Diagnosis of Bacterial Fish Disease
Lethbridge Community College
Dr. William Mackay

Kura Clover (T. ambiguum) Seed Production and Weed Control
University of Alberta
Dr. Jane King

Introgression and Molecular Characterization of Multiple Disease Resistance Traits
University of Alberta
Dr. Habibur Rahman

Spring Wheat Development: A collaborative program for Alberta
University of Alberta
Dr. Dean Spaner

Rapid Determination of Broiler Amino Acid Requirements and Amino Acid and Energy Availability of Feedstuffs
University of Alberta
Dr. Doug Korver

Disease Resistance in Brassica napus Canola: Proteomics-based Investigation
University of Alberta
Dr. Nat Kav

Molecular Enhancement of Seed Oil Production in a Modern Breeding Line of Canola under Field Conditions
University of Alberta
Dr. Randall Weselake

Regulation of Lysine Metabolism in Pigs
University of Alberta
Dr. Ron Ball

Swine Reproduction and Development Program
University of Alberta
Dr. George Foxcroft

Strategic Approaches to Reduce Phosphorus and Nitrogen Pollution Resulting from Swine Production
University of Alberta
Dr. Willem Sauer

Development of a Scientific Siting Tool and Odour Monitoring Procedures for Alberta Livestock Operations
University of Alberta
Dr. John Feddes

The Bovine Genome Project
University of Alberta
Dr. Stephen Moore

Cost-Effective Feeding of Farmed Deer
University of Alberta
Dr. Robert Hudson

Identification of Early Indicators of Metabolic and Reproductive Dysfunction from Over-Feeding Female Broiler Breeders
University of Alberta
Dr. Frank Robinson

Bovine Genome Annotation through cDNA Sequence
University of Alberta
Dr. Stephen Moore

First Generation Linkage Disequilibrium Maps of Bovine Chromosomes 14 and 19
University of Alberta
Dr. Stephen Moore

The Impact of Timing of Protein Intake and Growth Patterns on Reproductive Efficiency in Broiler Breeder Females
University of Alberta
Dr. Frank Robinson

Relationship of Embryonic Yolk Absorption to Clubbed Down, Poor Chick Quality, and Reduced Broiler Uniformity
University of Alberta
Dr. Gaylene Fasenko

Synergism of Phytase and Xylanase Addition to Finisher Pig Diets
University of Alberta
Dr. Ron Ball

Increasing Marbling & Reducing Waste Fat
University of Alberta
Dr. Erasmus Okine

Prairie Genome "Functional Genomics of Abiotic Stress in Crops: Brassica as a Model System"
University of Calgary
Dr. Allen Good

The Use of Milk Epidermal Growth Factor to Control Cryptosporidiosis in Cattle
University of Calgary
Dr. Andre Buret

Monocots Transgenesis Via Single-Stranded T-DNA Complex Delivery to Pollen
University of Lethbridge
Dr. Igor Kovalchuk

Vaccination Strategies to Enhance Immunity in the Bovine Mammary Gland
University of Saskatchewan
Dr. Andrew Potter

Chickpea & Lentil Cultivar Development for Alberta
University of Saskatchewan
Dr. Tom Warkentin

Development of Neonatal Immunization Strategies Against Bovines Respiratory Disease Using CpG Motifs as Adjuvants
University of Saskatchewan
Dr. Sylvia van den Hurk

Assisted Reproductive Technology in Horses
University of Saskatchewan
Dr. Claire Card

Vaccination Strategies to Enhance Immunity in the Bovine Mammary Gland
University of Saskatchewan
Dr. Andrew Potter

Chickpea & Lentil Cultivar Development for Alberta
University of Saskatchewan
Dr. Tom Warkentin

Development of Neonatal Immunization Strategies Against Bovines Respiratory Disease Using CpG Motifs as Adjuvants
University of Saskatchewan
Dr. Sylvia van den Hurk

Assisted Reproductive Technology in Horses
University of Saskatchewan
Dr. Claire Card

BIOPRODUCTS

Bio-Mass Production Research for Development of Biomaterials for Pulp and Building
Agriculture and Agri-Food Canada
Dr. Kwesi Ampong-Nyarko

Properties of Refined Wood and Non-Wood Chemical Pulps and their Papermaking Potential
Alberta Research Council
Mr. Wade Chute

Development of Long Term and Short Term National Strategy for Flax
Ag-West Bio Inc.
Dr. Ashley O'Sullivan

Biomass Energy From Animal Waste in Alberta
University of Alberta
Dr. Peter Flynn

Optimization of Kraft Pulping for Agri-Fibres
University of Alberta
Dr. Shijie Liu

Biodegradable Polymers from Alberta Oilseeds: Fundamental Science Pilot-Scale Development, Economic Feasibility and Market Analysis
University of Alberta
Dr. Suresh Narine

Alberta Consortium for Industrial Crops (ACIC)
University of Calgary
Dr. Maurice Moloney

Alberta Agri-Fibre Pulp Initiative
Implementation and Advisory Group Ltd.
Mr. Ian Murray

HEALTH & WELLNESS

Tolerance of Environmental Stresses by Escherichia coli Grown at Chiller Temperatures
Agriculture and Agri-Food Canada
Dr. Colin Gill

Integrated Control of Rhizoctonia Root Rot of Pulses (Pea, Lentil and Chickpea)
Alberta Research Council
Dr. Sheau-Fang Hwang

Development of Modified-Atmospheric Packaging to Maintain Fresh Saskatoon Fruit Flavour and Quality
University of Alberta
Dr. Wendy Wismer

CLA-Enriched Meat and Milk Product Development
University of Alberta
Dr. Erasmus Okine

Assessing the Consumer Acceptance and Market Potential of Alternative Meats
University of Alberta
Dr. Kevin Chen

Commercial Supercritical Fluid Extraction of Canola to Produce Higher Valued Oil and Meal
University of Alberta
Dr. Feral Temelli

Application Research for Barley/Oat Grain Components that are Produced by the Fractionation of those Grains Using a New/Novel Patented Technology
University of Alberta
Dr. Thava Vasanthan

Development of Prebiotics, Probiotics, and Synbiotics - Containing Functional Foods for the Management of Inflammatory Bowel Disease
University of Alberta
Dr. Lech Ozimek

Plant Made Pharmaceuticals: Achieving the Promise, Limiting the Risks
University of Alberta
Dr. Michele Veeman

Disease Fighting Nutraceuticals from Stress Induced Native Plants
University of Lethbridge
Dr. Kevin Smith

Development of Sanitizing Technology for Refrigerated Fixtures
Venger Group
Mr. Garvin Weber

Poultry Product Utilization Program
University of Alberta
Dr. Frank Robinson

FOCUS ON R&D: SUSTAINABLE PRODUCTION

Projects like these build on Alberta's world-class production expertise and provide a strong foundation for both BioProducts and Health and Wellness.

Poultry product utilization

In May 2004, the Agriculture Funding Consortium held a two-day Strategic Planning Session with Alberta's poultry industry, with widespread representation from producers, processors, government, funders and researchers. The goal of the planning session was to develop a strategic plan which clearly identified industry-driven R&D priorities for Alberta's poultry industry for the next five to 10 years. One of the top priorities resulting from this process was the enhancement of poultry product development expertise in the province.

Alberta has limited scientific resources in creating value-added products, despite recognition that one of the key areas of future growth is in value-added product development. Recognizing the critical need for scientific capacity in this area, the researchers, funders and industries met to develop a plan to address the need to add poultry product development expertise.

The result is a $13 million R&D program led by Dr. Frank Robinson, designed to bring scientific capacity in the area of poultry R&D to the province of Alberta. AARI and the Alberta Livestock Industry Develpoment Fund have invested $5 million over five towards this program.

Beef genomics

Supported by AARI funding, Dr. Stephen Moore is hot on the trail of a globally significant breakthrough: mapping the bovine genome. As the lead Canadian researcher on an international team, he's working to isolate genes that contribute to a variety of bovine functions.

Take net feed efficiency, the primary focus of Dr. Moore's research. Since feed costs account for 50% of total beef production costs, gaining a better understanding of the genetic basis of bovine nutrient uptake could pave the way for cost savings.

FOCUS ON R&D: BIOPRODUCTS

Biopolymers offer the potential to meet rising global demand for new materials, while enhancing Alberta's agricultural economy.

Biodegradable polymers

At the University of Alberta, Dr. Suresh Narine is researching how to turn Canadian oilseeds (such as flax and canola) into biodegradable polymers.

This research is supported by AARI and by the Alberta Crop Industry Development Fund. While still in the primary research stages, the project promises a number of benefits:

- reduced use of non-biodegradable plastics, which originate in finite and costly petroleum supplies
- reduced volumes of disposed plastics ending up in landfills
- new uses for Alberta's abundant supplies of high-quality oilseeds
- economic activity associated with this value-added activity.

Reaching the potential of triticale

In December 2002, the Alberta Crop Industry Development Fund, on behalf of the Agriculture Funding Consortium, held a one-day focus group on triticale.

Participants included industry, producers, government, funders and researchers. The purpose of the focus group was to identify the greatest opportunities for developing Alberta's emerging triticale industry, and to set R&D priorities for investment. Four immediate priorities were identified, including the development of a non-food industrial platform, an area where Alberta has expertise already. With this information, and with AARI being a large contributing partner of this project, the funders and researchers teamed up to develop a $1.5 million project to identify a non-food industrial platform for triticale. Since the project began, larger industrial partners have shown significant interest in further building on the industrial platform for triticale.

Agri-fibres hold promise

With Alberta's forest resources in finite supply, the potential of agri-fibres is attracting the attention of AARI-supported research. Agri-fibres can be produced from many sources, including cereal straw, hemp, flax and perennial grasses.

Moving agri-fibre from potential to product is the mission of Wade Chute, Lead of the Pulp and Paper Group at the Alberta Research Council (ARC). A key issue in Chute's work concerns the practicality of processing agri-fibres in conventional pulping equipment. A second ARC research initiative is investigating the use of agri-fibre as a material substituting for plywood or oriented strand board (OSB) in certain building applications.

The economics of both issues are compelling. As an example, while flax straw is worth $5 per tonne in the field, clean flax fibre sells for $1,500 per tonne on the world market. Alberta produces about 7 million tonnes of flax straw each year.

AARI investment in this agri-fibre initiative was approximately $1.5 millon.

FOCUS ON R&D: HEALTH & WELLNESS

An aging, increasingly health-conscious marketplace is creating fresh opportunity for Alberta's agriculture industry.

Fibre-rich oats

With support from AARI, Alberta researchers are working to unleash the full health benefits of oats.

How? In addition to being fiber-rich, oats contain beta glucan, which helps lower LDL cholesterol (the so-called "bad" cholesterol) and can therefore contribute to a reduction in heart disease.

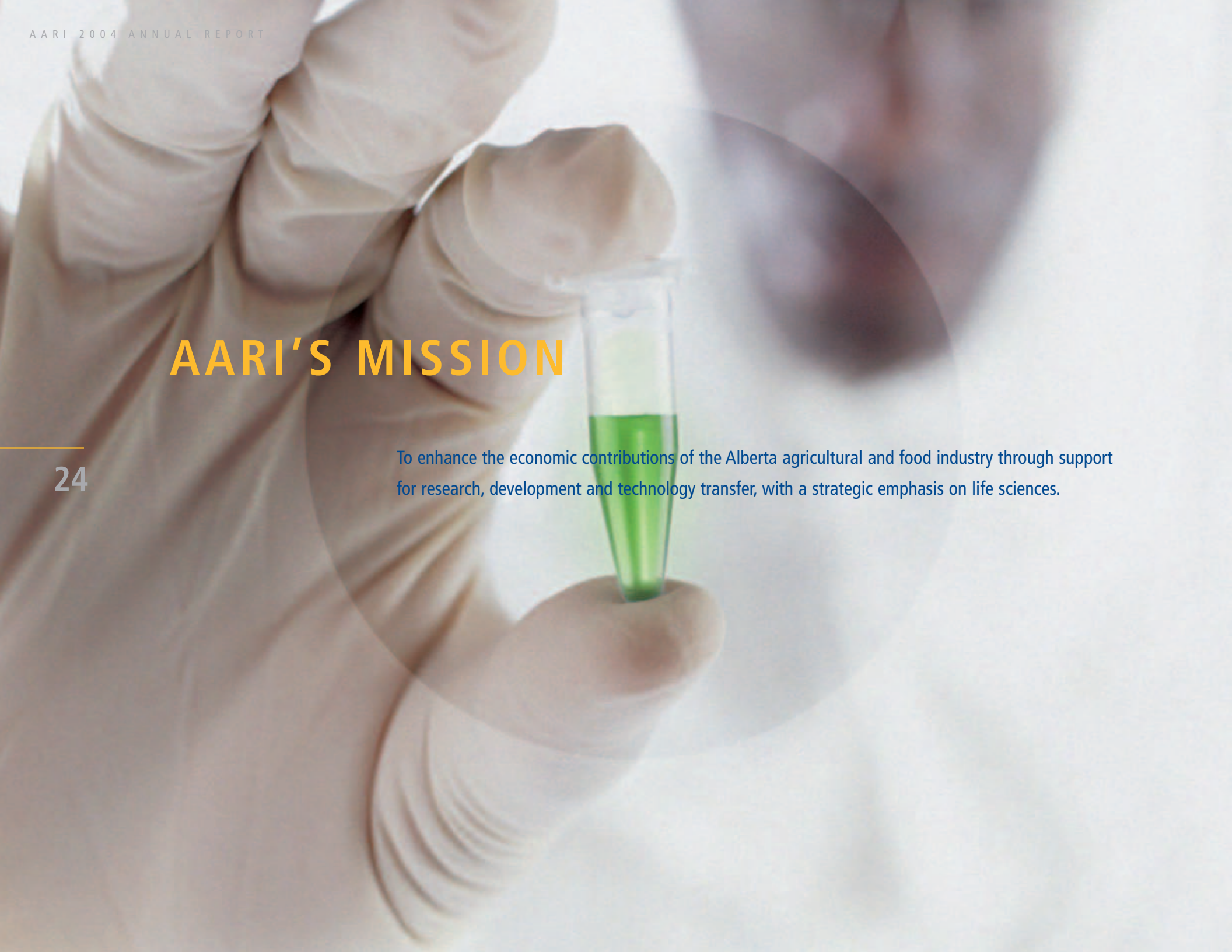
Dr. Kevin Swallow, a food scientist at the Food Processing Development Centre in Leduc, is studying how to use high-beta-glucan varieties of oats in pasta and noodle products. He's especially intrigued by the health benefits of making pasta with 60% oats and 40% semolina durum wheat.

His hypothesis is that this product could make oats' cholesterol-fighting properties more readily available around the world. It could also energize the incomes of oat growers and the prospects of Alberta's food processing sector.

Wanted: a better way to access beta glucan

Two University of Alberta researchers - Dr. Thava Vasanthan and Dr. Feral Temelli - are working on an innovative way to isolate and extract the heart-healthy components of grains like barley and oats. Of particular interest are the many possible applications of beta glucan as a food and feed additive. The researchers' hypothesis is that beta glucan can lower serum cholesterol levels, therefore the ability to 'fractionate' this substance from barley and oats can potentially make a vital contribution to the prevention of heart disease.

If all goes as planned, heart-conscious consumers could be buying food products enriched with beta glucan in as little as two years.



AARI'S MISSION

To enhance the economic contributions of the Alberta agricultural and food industry through support for research, development and technology transfer, with a strategic emphasis on life sciences.

GET INVOLVED

For more information
on the Alberta Agricultural
Research Institute,
please contact:

Alberta Agricultural Research Institute

9th Floor North,
John E. Brownlee Building
10365-97 Street
Edmonton, AB T5J 3W7
Tel: (780) 427-1956
Fax: (780) 427-3252

www.aari.ab.ca

AARI
Alberta Agricultural
Research Institute