

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
INTERNATIONAL ATOMIC ENERGY AGENCY
IN COLLABORATION WITH IAEA-SM-230
GESELLSCHAFT FÜR STRAHLEN- UND UMWELTFORSCHUNG mbH (GSF)

INTERNATIONAL SYMPOSIUM ON SEED PROTEIN IMPROVEMENT
IN CEREALS AND GRAIN LEGUMES

NEUHERBERG, FEDERAL REPUBLIC OF GERMANY

4 - 8 SEPTEMBER 1978

P r o v i s i o n a l P r o g r a m m e

TIMETABLE

Monday, 4 September 1978

9:30		Opening of the Symposium
10:00	Session I	The world protein and nutritional situation (1)
10:50		The need for and use of variability in protein characteristics (2)
		Genetics, biochemistry and physiology of seed storage proteins (3)
14:30	Session II	Genetics, biochemistry and physiology of seed proteins (3) (continued) Genetics and biochemistry

Tuesday, 5 September 1978

9:00	Session III	Genetics, biochemistry and physiology of seed storage proteins (3) (continued) Biochemistry and physiology
14:00		Poster and equipment display and discussion

Wednesday, 6 September 1978

9:00	Session IV	Natural and induced variability: Achievements and progress (4) Grain legumes
------	------------	--

Afternoon free for visits to scientific or cultural institutions.

Thursday, 7 September 1978

9:00	Session V	Natural and induced variability: Achievements and progress (4) (continued) Grain legumes and cereals
------	-----------	---

14:00 Session VI Natural and induced variability: Achievements
and progress (4) (continued)
Cereals

Friday, 8 September 1978

9:00 Session VII Natural and induced variability: Achievements
and progress (4) (continued)
Cereals and other crops

Analytical and nutritional techniques (3)

14:00 Session VIII Coordinated research programmes (6)

Prospects for the future (7)

16:50 Closing of the Symposium

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
INTERNATIONAL ATOMIC ENERGY AGENCY
IN COLLABORATION WITH
GESELLSCHAFT FÜR STRAHLEN- UND UMWELTFORSCHUNG mbH (GSF)

INTERNATIONAL SYMPOSIUM ON SEED PROTEIN IMPROVEMENT
IN CEREALS AND GRAIN LEGUMES

NEUHERBERG, FEDERAL REPUBLIC OF GERMANY

4 - 8 SEPTEMBER 1978

P r o v i s i o n a l P r o g r a m m e

IAEA-SM-230

MONDAY, 4 SEPTEMBER 1978

9:00 a.m. - Opening of the Symposium

10:00 a.m. - Session I

The world protein and nutritional situation (1)

- | | | | |
|----|-------------|---|---|
| 76 | R. Bressani | Instituto de Nutricion
de Centro America y
Panama,
Guatemala | Review paper.
Particulars to be given later. |
|----|-------------|---|---|

The need for and use of variability in protein characteristics (2)

- | | | | |
|----|---------------|---|--|
| 37 | G. Röbbelen | Institut für Pflanzenbau
und Pflanzenzüchtung
Universität Göttingen
D-3400 Göttingen | The challenge of breeding for
improved protein crops |
| 77 | R. Brock | FAO/IAEA,
Vienna, Austria | Mutation plant breeding for
improved protein |
| 10 | L.M. Dellaert | Institute for Atomic
Sciences in Agriculture,
Wageningen,
The Netherlands | Comparison of selection methods
for specified mutants in self-
fertilizing crops: theoretical
approach and experimental
results. |

IAEA-SM-230

Genetics, biochemistry and physiology of seed storage proteins (3)

- | | | | |
|----|--|--|--|
| 78 | O.E. Nelson | Department of Genetics,
University of Wisconsin,
Madison, Wisconsin
USA | Inheritance of protein and
amino acid content in plants |
| 93 | J. Jensen | Agricultural Research
Department,
Risø National Laboratory,
Roskilde, Denmark | Chromosomal location of high-
lysine genes in barley mutants |
| 38 | <u>F. Salamini</u>
N. di Fonzo
E. Gentinetta
C. Soave | Istituto Sperimentale per
la Cerealicoltura,
Sezione di Bergamo,
Bergamo, Italy | A dominant mutation interfering
with protein accumulation in
maize seeds |

14:30 Session II

Genetics, biochemistry and physiology of plant storage proteins (3) (continued)

Genetics and biochemistry

- | | | | |
|----|-----------------------------------|---|---|
| 60 | <u>J. Thomson</u> | CSIRO, Division of Plant
Industry,
Canberra,
Australia | Evolution and genetic control of
plant storage proteins |
| | H. Doll | Agricultural Research
Department,
Risø National Laboratory,
Roskilde, Denmark | |
| 4 | D. Boulter | University of Durham,
Department of Botany,
Durham, UK | Structure and biosynthesis of
legume storage proteins |
| 79 | <u>B.J. Miflin</u>
P.R. Shewry | Biochemistry Department,
Rothamsted Experimental
Station,
Harpenden, Herts.,
UK | The biology and biochemistry
of cereal seed prolamins |
| 71 | F.A. Burr | Department of Biology,
Brookhaven National
Laboratory,
Upton, N.Y.,
USA | Zein synthesis and processing
on zein protein body membranes |

IAEA-SM-230

- | | | | |
|-----|---|---|---|
| 39 | <u>C. Soave</u>
C. Balducci
A. Viotti
A. Marotta
N. di Fonzo
F. Salamini | Laboratorio biosintesi vegetali,
Milano, Italy

Istituto Sperimentale per la Cerealicultura,
Sezione di Bergamo,
Italy | Maize prolamine: synthesis and genetic regulation |
| 72. | B. Burr | Department of Biology,
Brookhaven National Laboratory,
Upton, N.Y.,
USA | Identification of zein structural genes in the maize genome |
| 32 | <u>A. Oaks</u>
K.E. Jones
D.W. Ross
D.E. Lenz | McMaster University,
Biology Department,
Hamilton, Ontario,
Canada | Enzymes of primary nitrogen assimilation in developing seeds of <u>Zea mays</u> . |
| 62 | F. Kolderup | Department of Botany,
Agricultural University of Norway,
Ås-NLH, Norway | Inter-conversions of amino acids in maturing wheat grains |

TUESDAY, 4 SEPTEMBER 1978

9:00 a.m. - Session III

Genetics, biochemistry and physiology of plant storage proteins (3) (continued)

Biochemistry and physiology

- | | | | |
|----|---|---|---|
| 95 | <u>B. Kjøie</u>
H. Doll | Agricultural Research Department,
Risø National Laboratory,
Roskilde, Denmark | Protein and carbohydrate components in high-lysine barley |
| 8 | <u>O.J. Crocomo</u>
T.S.G. Lee | Center for Nuclear Energy in Agriculture (CENA),
Piracicaba, SP,
Brazil | Biochemical investigations on the seed protein of a Brazilian variety and mutant of <u>Phaseolus vulgaris</u> |
| | E. Derbyshire | Department of Botany,
University of Durham,
Durham, UK | |
| 61 | <u>J.A. Thomson</u>
A. Millerd
H.E. Schroeder | CSIRO, Division of Plant Industry,
Canberra, Australia | Genotype-dependent patterns of accumulation of seed storage-proteins in <u>Pisum</u> |

IAEA-SM-230

- | | | | |
|----|--|---|---|
| 30 | W. Gottschalk
<u>H.P. Müller</u> | Institute of Genetics,
University of Bonn,
D-5300 Bonn | Investigations on the structures
of storage proteins of different
<u>Pisum</u> genotypes in dependence on
environmental factors |
| 94 | V. Haahr | Agricultural Research
Department,
Risø National Laboratory,
Roskilde, Denmark | Genetic variability in protein
yield and in nitrogen transloca-
tion of spring barley |
| 28 | <u>S.L. Mehta</u>
R.P. Johari
M.S. Naik
M.L. Lodha
A.B. Dongre | Nuclear Research Laboratory,
Division of Biochemistry,
Indian Agricultural Research
Institute,
New Delhi, India | Biochemical constraints that
determine protein quality and
grain yield in cereal grains |
| 97 | J. Cherry | Institut National de la
Recherche Agronomique,
Station d'amélioration
des plantes,
Montpellier Cedex,
France | Influence de la fertilisation
azotée tardive sur le rendement
et la qualité du grain de
variétés d'Orge et de lignées
en cours de sélection |
| 20 | H.K. Jain | Indian Agricultural
Research Institute,
New Delhi, India | Plant architecture and breeding
for higher protein yields |

14:00 p.m. - POSTER AND EQUIPMENT DISPLAY AND DISCUSSION

WEDNESDAY, 6 SEPTEMBER 1978

9:00 a.m. - Session IV

Natural and induced variability: Achievements and progress (4)

Grain legumes

- | | | | |
|----|-----------------------|---|---|
| 85 | S. Blixt | Weibullsholm Plant
Breeding Institute,
Landskrona, Sweden | Natural and induced variability
for seed protein in temperate
legumes |
| 2 | A.M.T. Abo-
Hegazi | Radiobiology Department,
Atomic Energy Establish-
ment,
Cairo, Egypt | High protein lines in field beans,
<u>Vicia faba</u> , resulted from a
breeding programme by the use of
gamma rays. 1. Seed yield and
heritability of seed protein. |

IAEA-SM-230

- | | | | |
|----|--|--|---|
| 13 | <u>M. Frauen</u>
C. Paul | Institut für Pflanzenbau
und Pflanzenzüchtung,
Universität Göttingen,
D-3400 Göttingen | Selection for methionine by GLC
after CNBr treatment in a world
collection and a mutagen treated
population of <u>Vicia faba</u> L. |
| 17 | <u>H.E. Gridley</u>
A.M. Evans | Department of Applied
Biology,
The University of
Cambridge,
Cambridge, UK | Prospects for combining high
yield with increased protein
production in <u>Phaseolus</u>
<u>vulgaris</u> |
| 68 | E.E. Hartwig | US Department of
Agriculture,
Delta Branch Experimental
Station,
Stoneville, Mississippi,
USA | Breeding soybeans for higher
protein content of seed |
| 73 | <u>D.R. Wood</u>
E.A. Nowick
H.J. Fabian
P.E. McClean | Department of Agronomy,
Colorado State University,
Fort Collins, Colorado,
USA | Genetic variability and herita-
bility of available methionine
in the Colorado dry bean breeding
program |
| 90 | H.A.S. Hussein | Department of Genetics,
Faculty of Agriculture,
University of Cairo,
Giza, Egypt | Gamma-ray and EMS-induced muta-
tions in <u>Vicia faba</u> L. Evaluation
of yield and protein traits of
mutants in M ₄ and M ₅ generations |
| 6 | K.H. Chow | Department of Botany,
University of Singapore,
Singapore | Selection methods for soybean
mutants with high protein content |
| 53 | <u>R.A. Luse</u>
K.O. Rachie | Centro Internacional
de Agricultura
Tropical,
Cali, Colombia | Invited repiew
Particulars to be given later |

Afternoon free for visits to scientific or cultural institutes.

IAEA-SM-230

THURSDAY, 7 SEPTEMBER 1978

9:00 a.m. - Session V

Natural and induced variability: Achievements and progress (4) (continued)

Grain legumes and cereals

- | | | | |
|-----|---|--|---|
| 36 | <u>L.J. Reddy</u>
J.M. Green
U. Singh
S.S. Bisen | International Crops
Research Institute for
the Semi-Arid Tropics
(ICRISAT),
Hyderabad, India | Seed protein studies on <u>Cajanus</u> ,
<u>Atylosa</u> and their hybrid
derivatives |
| 18 | M.M. Imam | University of Cape Coast,
Cape Coast, Ghana | Variability in protein content
of locally cultivated bean
genotypes (<u>Phaseolus</u> and
<u>Vigna</u> spp) |
| 33 | | International Maize and
Wheat Improvement
Center (CIMMYT),
Mexico 6, D.F., Mexico | Review paper (maize)
Particulars to be given later |
| 96 | <u>A. Boyat</u>
F. Kaan
S. Rautou | Institut National de la
Recherche Agronomique,
Station d'amelioration
des plantes,
Montpellier Cedex, France | Amelioration du maïs pour la
teneur en proteines du grain |
| 56 | V.A. Johnson | US Department of
Agriculture,
Lincoln, Nebraska,
USA | Review paper (wheat)
Particulars to be given later |
| 55 | <u>K. Müntz</u>
K. Hammer
C. Lehmann
A. Meister
A. Rudolph
F. Scholz | Zentralinstitut für
Genetik und Kultur-
pflanzenforschung
der Akademie der
Wissenschaften der DDR,
DDR-4325 Gatersleben | Variability of protein and lysine
content in barley and wheat
specimens from the World Collec-
tion of Cultured Plants at
Gatersleben (GDR) |
| 105 | <u>E.A. Favret</u>
R.M. Solari
L.E. Manghers | Departamento de Genetica
CICA - INTA,
Castelar, Argentina | Mutaciones para calidad y canti-
dad de proteinas inducidas en
trigo |

IAEA-SM-230

- | | | | |
|-----|--|--|--|
| 3 | S.G. Bhagwat
<u>C.R. Bhatia</u>
T. Gopalkrishna
D.C. Joshua
R. Mitra
P. Narahari
S.E. Pawar
R.G. Thakre | Biology and Agriculture
Division,
Bhabha Atomic Research
Centre,
Bombay, India | Increasing protein production
in cereals and grain legumes |
| 112 | <u>P.C. Parodi</u>
I.M. Nebreda | Department of Plant
Science,
School of Agriculture,
Catholic University of
Chile,
Santiago, Chile | Protein and yield response of
six wheat (<u>Triticum</u> spp.)
genotypes to gamma radiation |

14:00 - Session VI

Natural and induced variability: Achievements and progress (4) (continued)

Cereals

- | | | | |
|----|--|--|---|
| 49 | F.J. Zillinsky | International Maize and
Wheat Improvement
Centre (CIMMYT),
Mexico 6, D.F., Mexico | Invited review (Triticale)
Particulars to be given later |
| 82 | <u>W.R. Coffman</u>
B.O. Juliano | International Rice Research
Research Institute,
Los Baños, Laguna
Philippines | Seed protein improvement in
rice: achievements and
progress |
| 44 | K. Chutima

B.R. Jackson

S. Duangratana
R. Boonduang
N. Kongseree
<u>K. Suwantaradon</u> | Department of Chemistry,
Kasetsart University,
Bangkok, Thailand

The Rockefeller
Foundation,
Bangkok, Thailand

Department of Agriculture,
Ministry of Agriculture
and Cooperatives,
Bangkok, Thailand | Results of multi-location
tests over years for yield
and seed protein content of
Thai indigenous rice
varieties |
| 57 | Z. Sajo | Fish Culture Research
Institute,
Szarvas, Hungary | Mutation breeding project for
producing rice strains of higher
protein and lysine contents of
the grain in Hungary |
| 83 | A. Hagberg | The Swedish Seed
Association,
Svalöv, Sweden | Invited review (barley)
Particulars to be given later |

IAEA-SM-230

- | | | | |
|-----|---|--|--|
| 74 | <u>O. Stølen</u> | The Royal Veterinary and Agricultural University,
Department of Crop Husbandry and Plant Breeding,
Copenhagen, Denmark | Is it possible to increase protein production of standard barley varieties? |
| 100 | <u>V.K. Shumny</u>
L. Solonenko
M. Golysheva
A. Aksenovich | Institute of Cytology and Genetics,
Siberian Branch,
USSR Academy of Sciences,
Novosibirsk, USSR | Introduction of the gene " <u>hily</u> " into the genomes of the Siberian varieties of spring barley |
| 102 | <u>H. Walther</u>
K. Siebold | Gesellschaft für Strahlen- und Umweltforschung mbH
München,
D-8059 Grünbach | Improved protein mutants selected from barley after multiple EMS and X-ray treatments |

FRIDAY, 8 SEPTEMBER 1978

9:00 a.m. - Session VII

Natural and induced variability: Achievements and progress (4) (continued)
Cereals and other crops

- | | | | |
|----|---------------------------------------|--|---|
| 84 | <u>J. Artell</u> | Department of Agronomy,
Purdue University,
West Lafayette
Indiana, USA | Invited review
Particulars to be given later |
| 65 | <u>R. Rabson</u> | Department of Energy,
Division of Biomedical
and Environmental
Research,
Washington, D.C.
USA | Potential for improving protein content of pearl millet grain using induced mutations |
| | <u>G. Burton</u>
<u>W.W. Hanna</u> | Coastal Plain Station,
University of Georgia,
Tifton, Georgia,
USA | |
| | <u>H. Axmann</u> | Seibersdorf Laboratory,
IAEA, Vienna, Austria | |
| 63 | <u>I. Kreft</u> | Biotechnical Faculty
University of Ljubljana,
Ljubljana, Yugoslavia | Buckwheat as a potential source of high quality protein |

IAEA-SM-230

- 66 E.E. King US Department of Cottonseed protein: its status
H.R. Leffler Agriculture, and potential for improvement
Agricultural Research
Service,
Cotton Physiology and
Genetics Laboratory,
Stoneville, Mississippi,
USA

Analytical and nutritional techniques (5)

- 81 B. Georgi Institut für Strahlen- Analytical techniques for seed
E.-G. Niemann botanik, protein and amino acid analysis
D-3000 Hannover- including an interlaboratory
Herrenhausen comparison
- 47 W.J. Schön Institut für Pflanzenbau Particulars to be supplied later
U. Winkler und Pflanzenzüchtung,
Universität Göttingen,
D-3400 Göttingen
- 54 B. Eggum National Institute of Nutritional and anti-nutritional
Animal Science, assay
Copenhagen, Denmark
- L.D. Campbell Department of Animal
Science,
University of Manitoba,
Winnipeg, Manitoba,
Canada
- 34 F.R. Poey ICTA, Guatemala Germ endosperm relationship
R. Bressani INCAP, Guatemala in the nutritional improvement
A.A. Garcia ICTA, Guatemala of the maize grain
M.A. Garcia Colegio de Post-Graduados,
Chapingo, Mexico

14:00 p.m. - Session VIII

Coordinated research programmes(6)

- 86 B. Sigurbjörnsson Agricultural Research Invited review
Institute, Particulars to be given later
Reykjavik, Iceland
- T. Hermelin Seibersdorf Laboratory,
IAEA, Vienna, Austria
- R. Brock FAO/IAEA, Vienna, Austria

IAEA-SM-230

- | | | | |
|----|-----------|--|---|
| 15 | J. Gillot | Commission des
Communautés Européennes
Bruxelles, Belgique | Programme Commun de Recherche
sur L'Amélioration Qualitative
et Quantitative des Protéines
végétales mis en oeuvre par la
Commission des Communautés
Européennes |
|----|-----------|--|---|

Prospects for the future (7)

- | | | | |
|----|--------------|--|---|
| 87 | L. Munck | Calrlsberg Research Center,
Copenhagen, Denmark | Prospects for the future:
plant breeding |
| 52 | E.C. Cocking | The University of
Nottingham,
Department of Botany,
School of Biological
Sciences,
Nottingham, UK | The role of cell cultures in
the improvement of seed storage
proteins |
| 88 | J. Langridge | CSIRO, Division of Plant
Industry,
Canberra, Australia | Molecular vectors for plant
celss |

Closing of the Symposium