Dear Readers,

We are grateful to those Networks members who took part in the discussions regarding the potential creation of the new Working Group on agro-techniques. Remarks and suggestions would be considered carefully by the ESCORENA co-ordinator and chairman.

In this issue we just present large fragments of the paper regarding the effective transfer of technology presented by myself in New Zealand recently (see page 13). Your comments on how to improve technology transfer to sometimes backward linen industry are highly appreciated. Everybody knows that just now, the possibility of participation of particular institutions and research centres in the projects of 6th Framework Program of the European Commission would be considered. Let me appeal warmly to you to support any potential activities to enable the participation of as many Network members as possible – those from research centres, producers and processors, to assure undertaking of future research, activities and other endeavors important for the development of bast fibrous plants in Europe and the world. I encourage all of you to mutually help and support in the process of creation of the Networks of Excellence. Let me invite you to take active part in the events planned for 2003 and 2004 (see the last page).

I remind you also about the necessity to come to a decision regarding the host and venue of the next Global Workshop (see page 8). I maintain my belief in the growing importance of renewable textile raw materials.

Yours sincerely,

The Editor, Prof. Dr. Ryszard Kozlowski

CONTENTS

STRUCTURE OF THE NETWORK

The Network is one of the thirteen Networks working within ESCORENA (European System of Cooperative Research Networks in Agriculture). The ESCORENA Secretariat is provided by **REU** – FAO Regional Office for Europe in Rome, Italy. Responsible Dr. Rainer Krell – the Environment and Sustainable Development Officer, REUS, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy.

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Network Coordinator – Prof. Dr. Ryszard Kozlowski, General Director of the Institute of Natural Fibres, Poznan, Poland, tel. +48(0) 61 8480-061

Secretary of the Network – Maria Mackiewicz-Talarczyk M.Sc. (Agr.), Institute of Natural Fibres, Poznan, Poland, tel. +48(0) 61 8224-815

At present, the whole Network brings together 351 experts from 51 countries in the fields of research, economics, marketing and industry. Member countries are: Argentina, Australia, Austria, Belarus, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cuba, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Latvia, Lithuania, Mexico, Netherlands, Nigeria, Norway, Pakistan, Poland, Portugal, Republic of Serbia, Romania, Russia, Slovakia, Spain, South Africa, Sweden, Switzerland, Thailand, Turkey, UK, Ukraine, and the USA.

The Network is represented in **South America** by Prof. Dr. Alcides **Leão** (UNESP-Universidade Estadual Paulista, SP-18603-970 Botucatu, Brazil, tel. +55 14/6802 7163, fax +55 14/6821 3438, E-mail: alcidesleao@fca.unesp.br), in **North America** by Dr. Paul **Kolodziejczyk**, Lead Scientist, New Crops & New Products, Olds College Centre for Innovation, 4500 -50th Street, Olds, Alberta, Canada T4H 1R6, Telephone: (403) 507-7970, FAX: (403) 507-7977, E-mail: paulk@admin.oldscollege.ab.ca, www.occi.ab.ca and in **the Middle East** by Prof. Dr. Dardiri Mohamed **El-Hariri**, National Research Centre, El-Tahrir str., Dokki Cairo, Egypt, tel. +202/ 33 77164, fax: +202/ 33 70931, E-mail: elhariri_d_m@hotmail.com

NETWORK WORKING GROUPS (WG):

Please note!
A more detailed description regarding the activities of the six Working Groups was provided in all previous editions of this bulletin and is available at the Network's web page http://escorena.fao.org/

WG/1. Breeding and Plant Genetic Resources

Chairman – **Dr. Martin Pavelek**
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WG/2. Extraction and Processing

Chairman – **Eng. Martin Tubach**
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WG/3. Economics and Marketing

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WG/4. Quality

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The developments of the European program: **the COST Action 847: TEXTILE QUALITY AND BIO-TECHNOLOGY,** coordinated by **t**he Chairman of the Group Prof. S. Sharma and Dr. Johanna Buchert of VTT Biotechnology and Food Research, Finland are described on p. 18.

WG/5. Non-Textile Applications

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WG/6. Biology and Biotechnology

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WORKING GROUP NEWS

THE PROPOSAL TO CREATE A NEW WORKING GROUP

Dear Network members,

Please, find below the replies and comments from Network members, regarding the proposal given by Dr. Piero Venturi, Faculty of Agriculture, University of Bologna, Italy to create a new Working Group, dealing with agro-technique, to include topics connected with the presence of the fibre crop in the field: soil tillage; crop establishment (sowing); fertilisation; weed control; harvesting; plant physiology; interaction soil-crop and crop-environment (this last subject is not so relevant for flax but it is assuming more importance for hemp); first transformation at the farm, logistics of the transport and storage and, more in general, all the practices that can be included in agro-technique.

The proposed name of the Group:

a) agrotechnique and first transformation, b) agrotechnique and logistics, c) agrotechnique and processing until the gate of the factory

1. Dear Prof Venturi

I remember meeting you (and Stefano Amaducci) at the bast crops conference in Borovets, Bulgaria and we discussed some aspects of flax/hemp agronomy. At De Montfort University we are very interested in the agronomy, cultivation and primary/secondary processing of flax, hemp and other fibre crops. We have recently completed an EU FAIR project "The

cultivation and processing systems for the efficient recovery of fibres from flax for use as a staple fibre" and we have just begun a UK government funded project "Cultivation and processing of short fibre flax for high value textile end uses". Also in recent years, we have undertaken smaller projects on both flax and hemp with direct funding from industrial supporters. There are several more projects under consideration at the moment. We would be very interested in giving our full support to your proposal for a new working group on Agrotechnique + initial processing. If we can be of
further assistance please do not hesitate to contact me again.

Best regards
Ian Booth, Textile Engineering and Manufacture Research Group, De Montfort University, Leicester, UK
2. Dear Professor Kozlowski,
Thank you for your news bulletin. The suggestion put forward by Dr. Piero Venturi of University of Bologna, Italy to create new working group dealing with various aspects of bast fibre plantation other than the flax. The suggestion has significant weight and so suggested I agree the formation of new 3 groups. While considering the activity of the group, my suggestion is to include the problems related to jute cultivation in jute growing countries. Thanking You, Mr. Subimal Palit, Judges Bagan, Calcutta, India

3. Hola Piero. Gracias por tu respuesta y por la recepción de todo lo qué mandé. Descontaba que otros departamentos, además del tuyo, tenían también estrecha vinculación con esos temas pero la realidad es que sólo te conozco a ti y por eso abusé de tu gentileza. Ojalá se pueda armar algo. En relación a lo que me comentas de EUROFLAX, lo he visto. Antes de transladar una opinión a Kozlowski te la comento a ti. Sin duda la actual estructura omite vitales áreas que son incluso disciplinas en si mismas. Biology and Biotecnology es un grupo "raro". Para mi Biotecnología va más en el grupo de "Breeding and plant genetic resourses", pero ....en Fin... Tampoco se puede revolucionar todo. El nuevo grupo que dé lugar al desarrollo de las nuevas áreas de las que hablamos, debería contemplar "manejo del cultivo, técnicas de cosecha y técnicas postcosecha previas al uso industrial", No estoy seguro a qué se refiere con "logistics" pues es demasiado ambiguo y poco agronómico. Quizás un grupo que sólo sea agrotécnicas daría lugar a un amplio espectro de temas a analizar durante el cultivo que no son "Biología". La densidad de implantación, la elección con criterio agronómico de genotipos adaptados a diferentes ambientes y fechas de siembra, sistemas de labranza y mecanización, fertilización, manejo agronómico de malezas, enfermedades y plagas de origen animal son , todas ellas, áreas del conocimiento estrechamente vinculadas a la interacción suelo-cultivo-ambiente que él no reconoce en Flax (me da gracia, pues si lo hace en Hemp). Y esto último no puede independizarse de la ecofisilogía, nutrición y micrometeorología de canopeos, especialmente cuando cosechas tallos. El complemento obligado de tan amplio temario es la cosecha y las técnicas postcosecha, que cómo es obvio pueden determinar que grandes esfuerzos en esa primer área se vean perdidos económicamente por técnicas de cosecha y postcosecha inadecuadas.Yo puedo escribir directamente esto a Polonia, con mayor cuidado, para no herir formas de pensar tradicionales. O puedes citarlo tu, como apoyo a tu propuesta, no sólo con mi acuerdo sino el de la Cátedra de Cultivos Industriales de la Facultad de Agronomía de la Universidad de Buenos Aires. Dime tu qué prefieres que haga. Un abrazo.
Ing. Agr. Daniel Sorlino, Cátedra de Cultivos Industriales, Facultad de Agronomía, Universidad de Buenos Aires.

We would consider those proposals carefully together with the authorities of the ESCORENA Secretariat which is provided by **REU** – FAO Regional Office for Europe in Rome, Italy.

FLAX, HEMP AND ALLIED FIBRES IN THE WORLD

PRIMORDIAL AND TIMELESS FORMS: THE WORK OF HELMUT BECKER SPECIAL "HEMP ART" FEATURE

Helmut Becker (hbecker@julian.uwo.ca) is an artist and hand papermaker, also Professor Emeritus, Department of Visual Arts, Printmaking and Papermaking, 25 years at The University of Western Ontario, London, Canada.
Reprint from: http://www.hempreport.com/subscribers/issue18/toc18.html (having permission of the author and Hemp Report editor Mr. Arthur Hanks)

Becker is engaged in ongoing research in growing and processing fibre flax and industrial hemp for papermaking. Through his company FlaxHemp PaperWorks & Press. Becker makes paper, sells flax and hemp fibre and tow, artwork, and stainless steel Hollander paper beaters suitable for cottage industry.
Helmut's work has been shown internationally for the last three decades. Recently his work formed part of OHA the sponsored Renewal exhibition (BCE Place in Toronto, April. 2000; see http://www.hemphasis.com/oha/renewal.htm); his work was also featured at the McIntosh Art Gallery, London, January, 2000 (solo).
With this issue, The Hemp Report is very pleased to be able to present images of some of his fascinating images, supplemented by commentary by Helmut.

The Sun Disc

"The ***pi* disc** is thought to be the symbol of heaven, a statement probably first made in the second century AD ... This disc has a central circular opening about one-third of the total diameter. It is thought that this disc either represents the solar disc, or that the circular opening represents the sun shining in heaven. Its function in Chinese art has been described as being 'somewhat analogous to the cross-form' in western art. Other jade ring forms are called *huan* if the opening has a diameter half that of the disc, and *yuan* if the opening is even wider". (Palmer, J.P., *Jade*, London: Spring Books, 1967, p. 22.)

Becker on Becker:

Most useful plants for hand papermaking in the Orient, excepting hemp, were not available in the Western world.

My involvement in handmaking paper and linen/fibre flax research was awakened through visits in 1967 with two pioneers, hand papermaker Douglass Howell and multimedia artist Michael Ponce de Leon, both in New York. Howell designed and built his own stainless steel and phosphor bronze Hollander paper beaters, presses and tools for hand papermaking. For a time, over a half-century of research in handmaking paper, he was the only artist/craftsman active in this field in all North America. Ponce de Leon collaborated with Howell in experimentation on three-dimensional handmade sculptural prints and paper casts. He also pioneered with the Brand brothers in Manhattan to build the first machined and welded printing presses for artists anywhere. Earlier presses were made of cast iron.

…Through the inspiration of Douglass Howell, who experimented with fibre flax and linen, I have steadfastly conducted further research into fibre flax and linen for hand papermaking. Recycled rags of linen and hemp (used cloth, canvas, rope, etc.) were key raw materials in Occidental hand papermaking through most of the last millennium. Earlier in the Orient, and to this day, a much greater diversity of plants were employed, e.g., at high altitudes the plants Daphne and bamboo; at medium altitudes, paper mulberry and, for the famous Chinese hsüan chih paper, blue sandal wood (*Pteroceltis tartarinowii*); and at low altitudes, rice straw and hemp.

"Through the Moorish invasions, the technology of hand papermaking entered Europe around 1000 AD through Spain, around a millennium after its invention by the Chinese in 105 AD. The qualities of many extant early handmade papers are exceptional for strength, permanence and simple tactile beauty. More research is needed on the exact nature of the early handmade papers of the Middle East in the period 750 to 1000 AD, as well as on early European handmade papers. Several significant studies have recently been made by Aliza Thomas of the Netherlands on early Middle Eastern handmade papers and by Timothy Barrett on, '*Early European Papers, Contemporary Conservation Papers*'. To unlock the secrets of the past is not always easy. Another notable scholar is Victoria Rabal Marola in Capellades in Spain. Her findings on the design and function of medieval stampers, such as those in the Capellades Paper Museum are particularly valuable. I have conferred with all three researchers regarding subtleties involved in determining how the high quality and permanence of earlier handmade papers was achieved. All three have stimulated ideas for further research.

I have made studies by scanning electron microscopy (SEM) of suitable plant fibres for handmaking paper, most importantly, of flax and hemp. A substantial part of my research and creative artwork in the past twenty-five years has involved growing experimental plots of different varieties of fibre and seed flax at the field station of the Department of Plant Sciences, University of Western Ontario. The flax plants were hand-pulled. The plants, stripped of seed clusters, were then retted in several ways: on the field by dew, on the field under snow, in a stream, in a clay-bottom pond, and in a tank. These different techniques yield a palette of earth colours, which I have used to advantage in my creation of artworks from handmade paper".

"I am fascinated not only by the potential of fibre flax and hemp for application in handmade paper and paper artworks, but also by the history and technology of these fibres from earliest times. I am investigating hand beating of plant fibres and the use of stampers in both East and West in earlier times and wherever still practised today, as in China and Japan. I am continuing work on natural retting in which microorganisms in the presence of water remove most non-cellulosic matter from plant material, without added chemicals. If chemicals were needed then, as Yasuichi Kubota and the late Ashiro Abbe have done in Japan or as Chinese hand papermakers in Anhui do, I would use the least amount of soda ash to do the job.

When I visited Kubota, in Shimane Prefecture in Japan, on a Canada Council travel grant in 1983, he helped me handmake some green 'sekishu hanshi kozo' paper. Inner bark of kozo saplings harvested from neighbouring mountainsides was subjected to gentle physical and chemical processing, retaining the mildly poisonous green pigment which repels attack by bookworms. Today, following Kubota's rule of thumb, I prefer to process fibres using the weakest alkaline solution that will do the job of removing non-cellulosic matter. Alternately, if microscopic organisms in the retting process have already effectively accomplished the extraction, no further chemical or thermal treatment is necessary. The greater the chemical and physical abuse that plant fibres are subjected to, the more impermanent the handmade paper will be".

In China, the best fibre for the highest quality of handmade hsüan chih paper is sun bleached on rocky southern slopes for 6-12 months. In my own investigations, I have successfully sun-bleached fibre flax and hemp over snow in the winter. An exciting aspect of my work is the use of "green" (immature) fibre flax which yields finer fibres, paler and in less need of bleaching, and naturally lower in non-cellulosics.

Inspired by images of sunlight, water, earth, trees and stone-age dwellings, I created in the early 1980's a series of multimedia sculptural installations largely constructed in handmade paper. This subsequently led to a variety of other handmade paper creations. These are documented in, "*A Harvest of Light, Paperworks of Helmut Becker*", by Susan Warner Keene, Ontario Craft Magazine, Spring 1984 (available on microfilm from Micromedia Limited, 20 Victoria Street, Toronto, Ontario M5C 2N8; Tel 416/362-5211)

Having grown up in sparsely treed regions of the Canadian prairies, trees retain a special fascination for me. Tree materials are incorporated in many of my handmade paper art works. Wood, saplings, inner bark and leaves, worked in various ways, take on a new life. Through sculpting or fire, primordial and timeless forms and spaces are evoked".

Flax "Chapels"

"Bundles of fibre flax have been water retted in blue drums. In either case, dew retting, or water retting, microorganisms which are already present on the plants from the soil, will activate, either in the presence of water and air. Or in the presence of water alone. Most of the non-cellulose material will have been eaten away, leaving the long strong flax fibres and some shives (straw), The wet bundles are then shaped into hollow cones and allowed to wash clean in a rainfall or two and also to sun bleach. A little later the cone shaped chapels can be turned inside out for a more even bleaching and drying".

"I am one of the ongoing users of the field station, Plant Sciences Department, The University of Western Ontario. Here are some details from my field book 2000 season records: it is very interesting to run a test of industrial hemp pulled by the roots, which I invariably do with Fibre Flax, which I also did last year with my experiments with industrial hemp. (Most everyone else invariably cuts the industrial hemp plants by machine).

To hand pull hemp plants is back breaking hard work, and so is the hand processing step by step. To individually hand pull the green retted plants, sort out the sizes and semi strip the emerging flower/seed and leaf clusters took around 2 to 3 hours to eventually yield a kilo or so of fibre. There is the preparation of the running water tank, monitoring it and removal of the retted plants, semi-draining the soaked bundles of retted plants and then setting the semi-drained, semidried bundles in cone shaped "chapels" or lean flat layers at an angle against a support to completely air dry and be rinsed clean with a rain or shower. It is time consuming work, no two ways about it. For example, I kept track of the amount of time required to ribbon strip the fibre from the water retted hemp plants and to complete the ribbon stripping: it took between 2 1/2 to 3 hours for each of the 800 grams sets of 100 % free of hurd clean ribbon stripped hemp fibre... beautiful ultra strong fibre ... intend to hand spin some into yarn, thread or twine and possibly twist into rope segments.

The above labour intensive means will provide superior both fibre flax and industrial hemp fibre from which to create highest quality handmade paper for the fine arts and for archival work. ..."

"My 15 foot "Arctic Kayak" is a slight "takeoff" reconstruction of the design of a Mackenzie Delta kayak.

The following site I found invaluable: http://www.arctickayaks.com"

From *Arctic Kayaks*, David W. Zimmerly: "There are four known Mackenzie Delta kayaks, three of them in the Canadian Museum of Civilization collection. The construction is elegant. The Mackenzie Delta type is an inland kayak used to hunt beluga whales in bays and estuaries. All inland kayak types require a balancing act to paddle".

"The framework structure my kayak consisted of found weathered wood carved horn shaped stem and stern, steamed and bent found wood deck beams, ribs, circular cockpit and gracefully curving light 14 foot cedar gunwales, side stringers, keelson and deck stringers. All the wooden parts are intricately hand tied with hemp cord and hand ribbon stripped hemp fibres from hand pulled green hemp plants, running water retted hemp plants and earth retted hemp plants. This gave 3 distinctly different earth colours".

"My original intent was to cover the tied together wood structure of the sleek kayak with earth coloured hemp handmade paper sectors stretched taut to simulate sewn together seal skins. Perhaps paper pulp spray natural ochre colour hemp paper "seal skin" like layers over the intricate framework but the reconstruction looked so interesting on it's own at this juncture, that I simply decided to leave it intact at this stage".

"Somehow at this stage the entire kayak structure was so mysterious in its striking semi-see through appearance, that I felt compelled to leave it intact. A simulated handmade hemp paper seal skin covering will have to wait for a future second kayak work. I know that a taut stretched semi translucent seal skin like hemp paper kayak would no doubt have been equally as striking. From James Houston's book, *Confessions of an Igloo Dweller*, I will quote from an interesting section called "Kayak Dreams":

"An old man named Saumi. Left-Handed, had died and his elegant kayak rested on its stone rack near his grave by the Inukjuak River. The rack was to protect the skin from the teeth of dogs, who in the north will eat anything. His widow had seen me admiring it and when she noticed that I too, was left-handed, she decided to give me his kayak".

"The seal skins on Saumi's kayak were worn and opening along the seams. The many bent, wooden ribs needed to be retied with sealskin lashings and the whole kayak frame needed recovering. The old woman offered to organize the new sewing, and I contributed a skin or two, which was the custom."

"Old fashioned, perhaps shamanistic rules took over when it came to sewing the kayak. All men were warned by the women to keep away during the whole skin-covering process which, because of tradition or for practical reasons, had to be

completed between dawn and dark, I was very eager to see the Kayak repaired, so, using binoculars, I watched from a distant place among the rock. What would I do with a soggy-looking Kayak covering like that?
I was totally wrong. In the morning breezes, the scrapped kayak skins soon dried and tightened to drumhead smoothness and the early slanting sunlight made the kayak partly transparent, showing its inner ribs in a golden glow".
Becker: "Something quite similar and equally surprising would happen if I had covered my kayak reconstruction with strong earth coloured hemp handmade paper. In the wet state it would at first appear slack and limp but upon drying would become taut as a drum and semi-transparent in sunlight and very strong".

ACTIVITIES OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS

PROPOSALS FOR THE NEXT GLOBAL WORKSHOP

We feel that it is high time to discuss the proposals to host the next Global Workshop.
The coordinator obtained the proposal to host this most important event of the Network in Slovakia (see the letter of intention presented in the EUROFLAX bulletin No 15), Germany, UK, Latvia and Lithuania offered to hold the Global Workshop some time ago as well, but we need to have such offers up-dated.

Let's start to discuss this important issue; you are welcome to send new proposals and you are welcome to choose in a democratic way by the discussion forum the venue and the host of the next Global Workshop.

NEXT CONFERENCES PROPOSALS

INVITATION TO ATTEND THE INTERNATIONAL CONFERENCE

"FLAX AND ALLIED FIBRE PLANTS FOR HUMAN WELFARE" DECEMBER 1-4, 2003, EGYPT

FIRST CALL FOR PAPERS

Draft Proposal of the date, venue, topics, registration fee, duration, the main title
This proposal, prepared by:
Prof. Dr. Dardiri M. El-Hariri, NRC, Egypt, Prof. Dr. Ryszard Kozlowski and Eng. Maria Mackiewicz-Talarczyk, INF, Poland
Date: December 1–4, 2003
Venue: It will be held at the National Research Centre, El-Tahrir Str. Dokki, Cairo, Egypt.
Duration: three days for the conference presentations (oral and posters)and one day for a study tour and/or tourist visits
Main title:
The International Conference "Flax and Allied Fibre Plants for Human Welfare"
Topics: Biotechnology, breeding, production, processing, technological properties, application in textiles (spinning & weaving), nonwovens, composites, pulp & paper, human nutrition and animal feeding, medicinal uses, cosmetics, quality improvement, economical considerations.
Crops included: Flax, Hemp, Kenaf, Jute, Ramie, Rossela.
This conference will be held under the patronage of:
His Excellency Prof. Youssef Wally, Prime Minister,
The Deputy Minister of Agriculture and Land Reclamation
Prof. Moufed Sheheb
Minister of Higher Education and Scientific Research
Organisers:
Chairman of the conference:
Prof. Hany M. El-Nazer, President of the National Research Centre

General Reporter of the conference: Prof. Dr. Dardiri M. El-Hariri, Representative of the FAO/ESCORENA European Co-operative Research Network on Flax and other Bast Plants
for Middle/Near East

International conference coordinator: Prof. Dr. Ryszard Kozlowski, General Director of the Institute of Natural Fibres, the Co-ordinator of the
FAO/ESCORENA European Co-operative Research Network on Flax and other Bast Plants
Member of the administrative Committee: Mrs. Maria Mackiewicz-Talarczyk, the Secretary of the Coordination Centre of the Network.

Fore more details you can contact:
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Information about the next FAO/ESCORENA Workshop in 2003

Coordination Centre of the FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants organises the Flax workshop connected with the 50th anniversary of Experimental Farm of the Institute of Natural Fibres in Sielec Stary (1953-2003) entitled:
"Evaluation of economical and agricultural value of fibre and oil flax cultivars grown in Europe",
Poznan/Sielec Stary, Poland, June, 6-7, 2003
The selection of the most appropriate flax cultivar is the condition of obtaining high and good quality yield. That is why the knowledge about the value of grown and future cultivars allows for replacing worse cultivars by much better ones.
The attendance of flax breeders in the Workshop and the possibility of the presentation of their flax cultivars provides opportunity of introduction of their cultivars to be grown in other European countries.

More pieces of information will be given in the 1st circular in December 2002.
Your primary interest in the participation in this Workshop should be sent by November, 30 to:
Institute of Natural Fibres, ul. Wojska Polskiego 71b, 60-630 Poznan, Poland, Tel.: +48/61/8 48 00 61
E-mail: sekretar@inf.poznan.pl, Fax: +48/61/ 8 41 78 30

OPEN COMPETITION FOR THE BEST PAPER OR POSTER PRESENTED DURING THE CONFERENCES OF THE FAO EUROPEAN CO-OPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS

The Network coordination center proposes that the most interesting papers or posters presented during our network meetings and conferences would enter the competition.
The special jury will judge all papers and posters presented during the year, and we will let you know the results in due course.
All Network members are cordially invited to participate in the competition to be continued the next year.

SOURCES OF INFORMATION

Major links to information on network activities and/or network members

a. http://escorena.fao.org/ [ESCORENA, FAO, Rome – Network website]
b. http://iwn.inf.poznan.pl [Institute of Natural Fibres, Poznan, Poland]
c. http://www.csl.gov.uk/ienica [IENICA – Interactive European Network for Industrial Crops and their Applications in the Changing Millennium]
d. websites of the Network Chairmen:
   - http://www.agritec.cz [Martin Pavelek, AGRITEC, Sumperk, the Czech Republic]

- http://www.fh-reutlingen.de [Martin Tubach, Institut für Angewandte Forschung (IAF), Reutlingen, Germany]
- http://www.qub.ac.uk [Shekhar Sharma, The Queen's University of Belfast, UK]
- http://www.univ-rouen.fr [Claudine Morvan, Université de Rouen, France]

Sources of Statistical Data:
http://apps.fao.org [FAOSTAT Database Results], http://www.texdata.com, http://www.its-publishing.com, www.naturfaser-wirtschaft.de

Possibilities of cooperation with other Networks and Associations on Industrial Crops

1. **INFORRM_IENICA** – Industry Network for Renewable Resources and Materials – Interactive European Network for Industrial Crops and their Applications in the new Millennium. Coordinator of IENICA: Mr. Melvyn F. Askew, Ministry of Agriculture, Central Science Laboratory at York CSL/MAFF, SAND HUTTON, YORK, UK Y04 1LZ, tel. 44-1904-462309; fax: 44-1904-462256, E-mail: m.askew@csl.gov.uk, For more data see http://www.csl.gov.uk/ienica Coordinaator of INFORRM: Dr. Nigel Oliver, Operations Director, ACTIN, Pira House, Randalls Road, Leatherhead, Surrey KT22 7RU, UK, Tel: +44/1372 802054, Fax: +44/1372 802245, E-mail: info@actin.co.uk, Website:http://www.actin.co.uk**Flax Council in Canada;** The Council is based in Winnipeg, with Mr. M. Barry Hall as President. Mr. Donald H. Frith has retired. The address of this institution is: FLAX COUNCIL OF CANADA, 456-167 Lombard Avenue, Winnipeg, Manitoba, Canada R3B 0T6, tel.: (204) 982-2115, fax: (204) 942-1841, E-mail: flax@flaxcouncil.ca
2. **The Fiber Society** with Mr. Charles A. Cannon Professor as Secretary, Director Emeritus, Nonwovens Cooperative Research Center, College of Textiles, Box 8301, North Carolina State University, Raleigh, NC 27695-8301 USA, e-mail: subhash_batra@ncsu.edu, web page URL: thefibersociety.org
3. **International Hemp Association,** Postbus 75007, 1070AA Amsterdam, The Netherlands. Tel/fax: +31 (0)20 618-8758, E-mail: iha@euronet.nl
4. **European Industrial Hemp Association (EIHA).** Coordinator: Dr. Michael Karus, nova – Institut, Institut für politische und ökologische Innovation, Nachwachsende Rohstoffe , Thielstr. 35, 50354 Hürth, Germany. tel: +49/2233 94 3684, fax: +49/2233 94 36 83, E-mail: michael.karus@nova-institut.de
5. **Olds College Centre for Innovation Natural Fibre Centre (OCCI),** 4500 -50th Street, Olds, Alberta, Canada T4H 1R6, Telephone: (403) 507-5206, FAX: (403) 507-7977, E-mail: relvestad@admin.oldscollege.ab.ca, www.occi.ab.ca

Internet Hemp Information Sources

- http://Hemp-CyberFarm.com/(information about hemp events, research organizations, correspondence, current legislative efforts in the USA etc.)
- Hemptech: The Hemp Information Network (http://www.hemptech.com/hnews.html)
- http://www.interlog.com/~ihn, * www.naturfaser-wirtschaft.de
- www.hemp.co.uk regarding **H**emp **F**ood **I**ndustries **A**ssociation Contact person: Mr. Paul Beinhaim, E-mail: paul@hemp.co.uk

LINKS OF THE FAO/ESCORENA EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS WITH DIFFERENT NETWORKS AND PROJECTS

The European Cooperative Research Network on Flax and other Bast Plants establishes links with the Cotton Network, intending to share and compare the achievements in scope of e.g. bioprocessing of fibres and materials.
The close cooperation of the Coordination Centre with the FAO Intergovernmental Group on Jute, Kenaf and Allied Fibres as well as the Intergovernmental Group on Hard Fibres resulted in the continuous participation of the Network Coordinator in the meetings of these Groups as well as in co-organization and hosting of the FAO Intersessional Consultation on Fibres by the Institute of Natural Fibres (15-16.11.1999).
The Network's members and the Coordination Centre are active in the co-operation and work within the following EU projects:

- **COST Action 847:** ***Textile Quality and Biotechnology*** (within *COST- European Co-operation in the Field of Scientific and Technical Research)*. The Network's scientists are active in the work of two Working Groups: WG/1 "Quality assessment of natural fibres" (chaired by Prof. Dr. S. Sharma) and WG/2 "Bioprocessing of Bast Fibres" (chaired by Prof. Dr. R. Kozlowski). They are contributing to establishing unified quality assessment of bast fibres in Europe as well as to develop environmentally friendly production technologies for textile industry by using enzymatic processes (for more pieces of information see COST Action 847 news in this issue).

- **COST Action 628.** ***Life Cycle Assessment of Textile Products, Eco-Efficiency and Definition of Best Available Technology (BAT) of Textile Processing.*** Program, served by the EU, in scope of COST system. The duration: 4 years,

from 9 November 2000 to November 2004. The experts from the following 12 countries are participating in the program: Belgium, Czech Republic, Finland, France, Germany, Greece, Poland, Rumania, Spain, Sweden, Switzerland and UK. COST Action aims in reinforcing of co-operation between all current and future European Research joint with ecology in textile industry. The multidisciplinary character of the research is necessary to achieve the success; the experts are chosen from diversified organizations joint with textile technology and chemistry, environmental protection and so called *eco-labelling*. The following three Working Groups act within the COST Action 628:

- WG/1 Life Cycle Assessment (LCAs) on the textile products chain
  Chairmen: Dr. Marion Tobler-Rohr - Switzerland, Dr. John Binkley – UK
- WG/2 Dematerialization of the textile products chain
  Chairman: Prof. Christopher Koroneos, Greece
- WG/3 Eco-efficiency indicators and Best Available Technology (BAT) definition
  Chairmen: Prof. Heinrick Planck – Germany, Mr. Bob van der Beke – Belgium
  The Management Committees took part on 12 March at the EU, Brussels, Belgium; 2nd MC together with Working Groups' meeting took part on 18 and 19 October 2001 in Thessaloniki, Greece. The following MC Meeting combined with WG meetings is expected to be held on 25th-27th April 2002 at the Universidad Politecnica di Cataluna in Barcelona, Spain.

➢ **INFORM-IENICA project** [Contract No QLK5-2000-00111]**:** the European Commission supports 3 year project, started on 22 April 2001, during the Inaugural Meeting at Central Science Laboratory (CSL) in York, UK.
IENICA is the Interactive European Network for Industrial Crops and their Applications in the Changing Millennium. Coordinator: Mr. Melvyn F. Askew, Ministry of Agriculture, Central Science Laboratory at York CSL/MAFF, SAND HUTTON, YORK, UK Y04 1LZ, tel. 44-1904-462309; fax: 44-1904-462256, E-mail: m.askew@csl.gov.uk, http: //www.csl.gov.uk/ienica). **INFORRM** is an Industry Network for Renewable Resources and Materials. The activities are coordinated by Dr. Nigel Oliver and Mr. Ian Bartle, Alternative Crops Technology Interactive Network Limited (ACTIN Ltd), PIRA House KT22 7RU, Leatherhead, UNITED KINGDOM.

The EC/Brussels merged two independently submitted INFORRM and IENICA projects to act jointly and in close cooperation *(within Concerted Actions)*. IENICA report on industrial crops and their applications prepared on the basis of the previous project is available and it is the first market-driven overview of the prospects for alternative crops and the industrial crop situation in Europe. It contributes to accessing and discovering the fascinating potential Europe has at its disposal in creating more sustainable industrial growth for future generations (see http: //www.csl.gov.uk/ienica).

CONTRIBUTIONS

THE EAST GOES WEST

Mr. Gordon Mackie, C.Text.FTI C.I. Mech.E. FRSA, International Textile Consultant
228 Ballylesson Road, Drumbo, Lisburn, BT27 5TS, N. IRELAND, UK, tel: +44 (0) 2890-826541, fax: +44 (0)2890-826590, e-mail: Gmackie@tesco.net

As a young schoolboy in Dublin I made wooden tops on a lathe in woodworking class, and painted them in bands of bright colours. Winding a string around the neck of the finished tops we flung them down onto the smooth concrete playground, and lashed them with short handled whips to keep them spinning. Their stripes dissolved in a wobbly blur and it was impossible to say what the original colours might have been.

This analogy sprang to mind as I watched a fashion show in Shenyang City in north-eastern China. The cultural amalgamation was making my head spin and the result was disorientation and an uncertain sense of reality. The backdrop on the set announced that it was part of the "Bast Fibrous Plants September 2001 Conference", a banal title for a fashion show if ever there was one. Jola Zalecka of Poland proclaimed that the theme for the show was- "We want to live in flowers" which was little better. What the hell did it mean? Were they pretending to be bees or people?
All these doubts were compounded as the girls parade on the marmalade coloured catwalk. They ponced by with an arrogant slouch, eyes soft yet defiant, walking with a characteristic flip of the knee, as they jerk along in slow motion. It seemed as if they imagined themselves to be virgins parading provocatively in front of their husbands on their wedding night.
On the surface it could have been a fashion show in Paris or Milan, but not at all, this is a city of six million people, far away in the middle of provincial China. It is listening to the cultural message of Europe and America, its soft power, and showing every sign of taking it in. The salon is jammed; all the staff of the hotel has come to see the show, and show every sign of being impressed. The young Chinese girls are clearly fascinated, for them this is live T.V, it is Georgio Armani and the Hollywood dream right there in front of them. Individual freedom, social change, and open sexuality strut about in front of them. No wonder they stand open mouthed with a half smile stuck inanely on their faces.
The Polish Ambassador, the chubby and cheerful Ksawery Burski, sits proudly in the front row. Poland is sponsoring the show in a vain attempt to recover lost ground in the everlasting world trade war. The local political panjandrums are all there

too - even the Communist party boss; the works. They ogle and clap along with the rest of us, seemingly oblivious to the fact that this, a mere fashion show, is capable of blatantly subverting the most basic tenants of communist doctrine.
The girls are all from the Quian Xiao Nong studios. Their clothes are perfectly presented not an eyelash out of place, not a sign of the safety pins holding their glad rags in place. Slim and tall, as are many of the girls in Northern China, they stare at us spectators and voyeurs alike, the hazy outline of their knickers visible under the eveningwear. The only hiccup in an otherwise seamless show is little Wu Wang, a painted child in a white linen suit and Roman style sandals; she trips over her untied laces and falls flat on her face. She picks herself up quickly, but not before the audience with a gasp has moved involuntarily forwards to help her get up.
The first half of the show ends as suddenly as it began, and Jola, the Polish dress designer, who has been using Chinese fabrics, comes on to take a bow. She looks happy, but vaguely embarrassed, maybe by the cultural mayhem her clothes have caused? After all, visible knickers in public in front of the party chief! Has she gone too far?
The next presentation is in a lower key and more relaxed. The world has spun on its' axis and the fabrics are Polish and the clothes by a Chinese designer, Pi Shih. The boys join the girls on the catwalk; they are all the epitome of good looks, whether in Chinese or international terms. Complete with dark eye-shades they might have stepped from the pages of Hugo Boss. One young fellow hung with gold chains bares a shoulder like a Celtic warrior. The tall and elegant Li Wei partly flashes her modest chest and defies us to look and admire it. Her long legs are encased in black fish net stockings, which end near her waist.
It is all pretty much at the level of professionalism that one might expect in Hong Kong or Singapore. Finally, one of the models gives a broad grin, I can feel a sigh of immediate relief all round. Thank God, these are really breathing, farting humans, not simply clever mincing robots.
The human show amongst the models and the audience is so absorbing that I hardly notice the clothes at all, although I did like a Japanese black kimono jacket, but not the floral print on the model's trousers. I had made my own brief fashion show during the first conference session, posing briefly as a Mafia boss in a white jacket made from a new jute and viscose fabric. To ram home the message I leave the top button undone, as in China, this is a trademark of the gangster. To complete the effect I had put on dark glasses. It was enough to earn a spontaneous round of applause from the staid conference audience.
Yep, the arched backs, the neat bums all very fancy, but what the hell could dumpy old granny wear for her sixtieth birthday? Certainly not this stuff. Not to worry, the memory of youth lurks in us, grandparent or not, and it jumps out to surprise us all once in a while.
The show is over, a large floral bouquet is presented to the happy Chinese lady designer and the girls and boys emerge for a well earned round of applause. The music throughout the show has been haunting me, suddenly I realise why; it has been a medley of Gaelic folk music played in the Chinese manner. What a crazy cultural jumble. Take it from me, China is awake, and is making its' own unique contribution to the kaleidoscope of colours in a topsy-turvy world.

LETTERS TO THE EDITOR

Shenyang, China, June 21, 2002
Dear Professor Kozlowski,
Dear Maria,

After the international conference, we keep trying to find co-operator to change our technique into product. Presently we get the initial progress. We have completed the planning business affairs – The Project of TCF Bleached Paper of 200,000T/yr from the Whole Hemp Stem as Raw Material and now we are searching for the cooperator and investment for building paper mill.

The international conference in the last year made a great effect on agriculture and spinning in our province. More and more peasants begin to plant hemp consciously. These make the usage of hemp enter a new time.
At the same time many thanks for your support and help to our project.
You have enormous network organization and have a lot of information in this field. We wish you would continue to promote our project in this field to the world.

Please keep in touch closely and welcome to China again.
Best wishes,

Mr. Tian Xin and Mr. Yin Xiangyang
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Delivered-To: netflax@inf.poznan.pl
From: "Sukanchan Palit" <kanikapa@cal2.vsnl.net.in>

To: "Maria Mackiewicz-Talarczyk" <netflax@inf.poznan.pl>
Subject: Re: info about some forthcoming conferences
Date: Sun, 4 Aug 2002 09:26:22 +0530
X-Mailer: Microsoft Outlook Express 5.00.2615.200

Dear Professor Kozlowski,
I am sending the following for your kind help/ suggestion. It seems that Hemp would surpass other bast fibers within the next 10 years. Therefore I want to share my experience with lovers of Hemp.
I am a retired scientist on Jute and now offering service to a jute machine manufacturer at Calcutta, India.
Hemp industry is growing faster than the expectation. While jute industry is declining. Hemp fibre has some properties superior to jute. It can replace jute even in the packaging field. Globally its quantity is insignificant to attract the Hemp industry to divert the product range.
I can assist to design the process up to spinning, which is complicated, and requires specialized knowledge.
I will appreciate it if you circulate my this proposal widely among the people involved in Hemp industry.
Mr. Subimal Palit, Judges Bagan, Calcutta, India, E-mail: kanikapa@cal2.vsnl.net.in

SPECIAL STUDIES, NEWS, FORUM OF THE DISCUSSION

WEAKNESS OF TECHNOLOGY TRANSFER FROM R&D TO INDUSTRY AND IDEAS HOW TO MAKE THIS SYSTEM MORE EFFICIENT

Ryszard Kozlowski, Institute of Natural Fibres, Poznan, Poland; Eugeniusz Budny, Institute of Mechanised Constr. & Rock Mining, Poland; Małgorzata Helwig, Institute of Natural Fibres, Poznan, Poland, George Zagner, ATEP Inc., Santa Ana, CA, USA

Paper presented at ACCM-3 (2002); The 3rd Asian-Australasian Conference on Composite Materials, on 15-17 July 2002, Auckland, New Zealand.

Abstract

Transfer of technology could be briefly defined as a technical skill taken from a nation or place where it is already established to another nation or place where it is unknown. How do different conditions determine innovation and research development? Are there any institutions helping with technology transfer not only to domestic industry but to other countries as well? What are the weak points of technology transfer? What could be done to improve that system? These are some questions, which the authors would like to answer in this paper.

Introduction

Science, technology and industry are now in the period of changes, reflecting the ongoing move to a knowledge-based economy [1]. Recent developments in science, technology and industry are linked to rapid technological change, globalization and great diversity in the firm behavior [1].

Main responsibilities of scientific institutes and R&D centers are so-called applied research and development, i.e. implementation of research results into all sorts of economic practice.

There is a common opinion that the state of applied research of a given country determines the state of its economy nowadays and in the future and the state of fundamental research determines the strategy for future development.

The most important conditions determining technology transfer are the following:
- Creation of links between science and industry;
- Implementation of technology wider than only in place of its origin (e.g. one country), spreading know-how;
- Exchange of experience and technologies between governmental and private research centers and laboratories;
- Creation of appropriate conditions for intellectual property concerning technology, its promotion and application to the industry.

It should be mentioned that various mechanisms for technology transfer are as follows:
- Cooperation in research;
- Agreements for cooperation in R&D;
- Licenses and rights;
- Scientific and technical conferences;

- Trade fairs;
- Dissemination of information, etc.

Chosen data on innovation factors

In the innovation process science makes only one of its elements. Investment in development should create the utility of the product, based on ideas.

One of very important simulating factors for technological progress is the expenditure on R&D in a particular country. Figure 1 presents percentage of GDP spent by different countries on R&D in 1998 [2]. An emerging problem of decreasing funds for R&D is observed in some developing countries, including Poland.

Beneficial trend can be observed in many developed countries where funds for R&D from government sources are shrinking and funds coming from business sector are growing. Figure 2 shows those trends in the years of 1981-99 [3].

Figure 1. Total funds spent on R&D as % of GDP in different countries in 1998 [2].

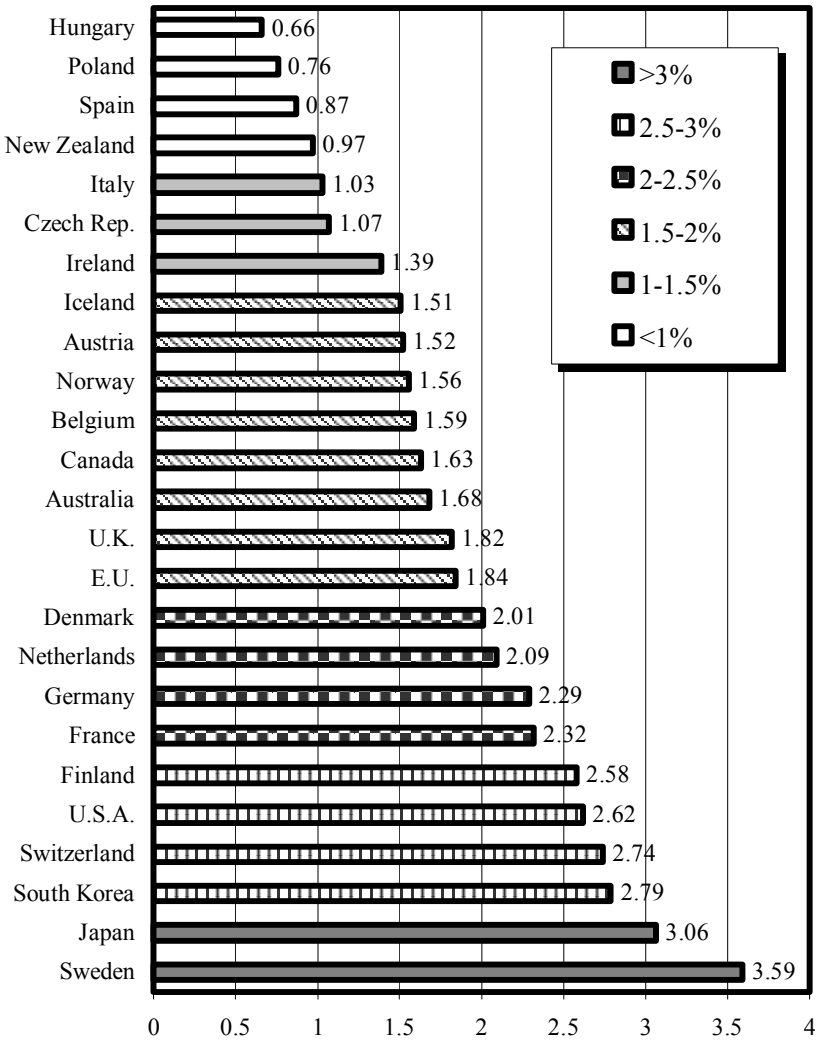


Figure 2. Trends in funding R&D in the OECD area, 1981-1999 [3].

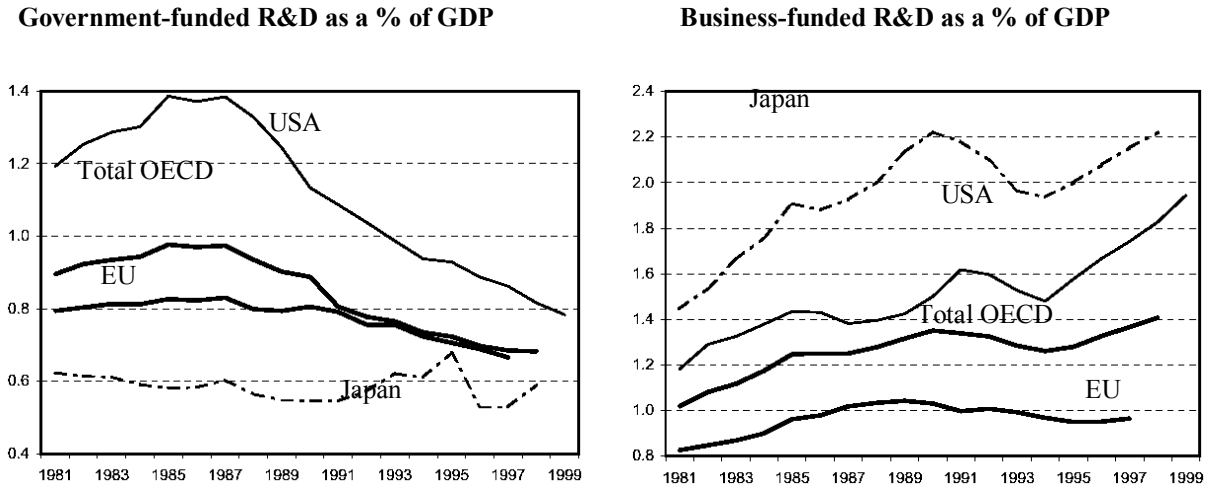
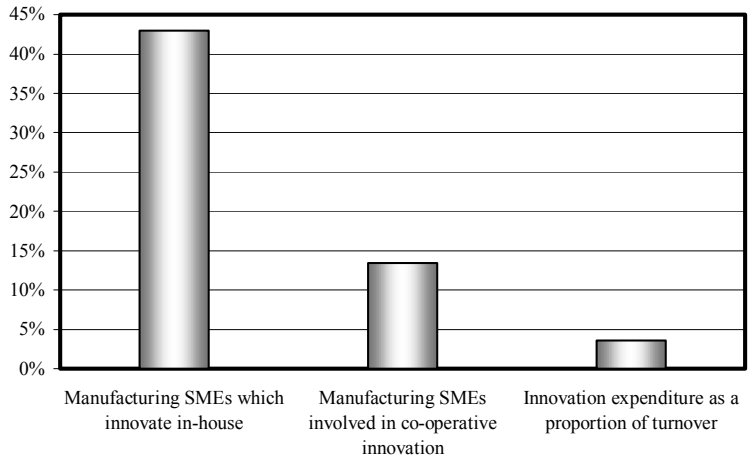


Figure 3 shows key indicators on innovation activity for small and medium-sized enterprises (SMEs) [4].

Figure 3. Key indicators of innovation activity in EU (average), 1996 [4].



Causes of weakness of techno-logy transfer system

- A great gap in the way of thinking between scientists and people from industry.
- The lack of efficient information flow from universities and R&D centres to the industry and vice versa.
- Frequent wrong attitude of the industry people who are concerned about the problems or hazards associated with the field of their activities.
- The lack of suitable links capable of transforming research results into the form acceptable to industry.
- R&D organizations not sufficiently supportive of technology transfer.
- Low expenditures on R&D, especially in developing countries.
- Non-complementarity of R&D units and universities, which frequently believe that published (or just written) research data are sufficient, without their verification on a pilot plant scale and without consultations with collaborating units as well as with those providing equipment and installations.
- Bureaucratization of the system, which distributes research funds by government agencies and other institutions. It causes researchers to avoid difficult projects, capable of ensuring adequate progress and instead, work on small projects of little importance, which do not result in progress in technological development.
- Ineffective system of research projects acceptance, which often caused approval of unimportant projects to the development of a given branch of economy.

How to improve the system?

- Attempts at obligating universities and R&D units to create maximal links between their activities and industry by:
  - direct research orders from industry,
  - fighting bureaucracy in governmental agencies evaluating reports on economic development.
- Reorganization of the system of activities of universities and R&D centres in such a way that the service to the development of new technologies will become their all-important task.
- Appropriate policy concerning patents, licenses, and royalty distribution, which should give preference to the units showing the highest activity and being the most useful.
- Further globalization in the field of international collaboration between scientists and industry as well as government agencies and research centres.
- Create the opportunity to employ by particular R&D centres high-ranking specialists from all over the world.
- Improve reliability of scientific research results.
- Possibility of creating new, independent, self-supporting, non-profit institutions, which would act as a missing link between R&D centres and the industry.

It would help to transfer research results into practical form, which would be acceptable to the industry. With heavy emphasis on Internet and practical approach, this kind of institutions would greatly improve technology transfer worldwide and regionally.

Conclusions

1. The analysis of statistical data showed that there is a relation between total R&D expenditures and economic growth. However, other factors such as distribution of funds, globalization, appropriate employment policy, etc. play an important role in the innovation process of a particular country.
2. Business R&D is still growing and we are convinced that this system is more effective than government-supported R&D.
3. Unfortunately, governmental and intergovernmental (e.g. EU) systems of R&D financial support create bureaucracy and waste of funds.
4. The main causes of weakness of technology transfer are as follows:
   - The lack of suitable links between R&D centres and industry;
   - Wrong and insufficient organization of R&D centres and their financial supporting system;
   - Low expenditures on R&D;
   - Non-complementarity of R&D;
   - Ineffective system of research projects acceptance.
5. The proposed ways for improving the technology transfer system are the following:Possibilities for creation maximal links between R&D and industry;
   - Improvement of R&D activities in the field of technology transfer;
   - Direct research orders from industry;
   - Further globalization in the field of international collaboration;
   - Appropriate policy concerning patents, licenses, and royalty distribution.

The above-mentioned rules apply not only to developing countries, but to countries with strong and developed economies as well.

References

1. Science, Technology and Industry Outlook: 1998 Edition.
2. W. Katner, R. Kozlowski, M. Helwig: Transfer of Technology – An Important Tool for Effective Cooperation. *Proc. of the Int. Conference on Bast Fibrous Plants on the Turn of Second and Third Millennium, Shenyang City, China, 18-22.09.2001*, pp. 1-14.
3. OECD, Main Science and Technology Indicators, 2000-1.
4. *Innovation & Technology Transfer,* 4/01

NEWS ABOUT THE EUROPEAN PROJECTS WITH INVOLVEMENT OF NETWORK MEMBERS

COST ACTION 847 "Textile Quality and Biotechnology"

COST = European Co-operation in the Field of Scientific and Technical Research. COST is a European program, served by the European Union in Brussels.
Nineteen COST countries had signed the Memorandum of Understanding to participate in the COST Action 847. The number of registered scientists is 95: Austria (3), Belgium (5), Bulgaria (2), Czech Republic (2), Germany (9), Denmark (1), Estonia (3), Finland (9), France (2), UK (9), Greece (9), Hungary (5), Italy (3), Lithuania (2), the Netherlands (7), Poland (9), Portugal (8), Romania (7) and Yugoslavia.
The period: from June 15, 2000 to June 14, 2004
The basic document: Memorandum of Understanding: MoU 245/00
Chairperson: Dr. Johanna BUCHERT, VTT Biotechnology, Tietotie 2, P.O. Box 1500, Espoo, Finland, tel: + 358 456 5146, fax: + 358 94552103, E-mail:johanna.buchert@vtt.fi, http://www.vtt.fi/bel
Vice-Chairperson: Prof. Dr. Shekhar Sharma, The Queen's University of Belfast, Department of Applied Science, Faculty of Agriculture & Food Science, Newforge Lane. Belfast BT9 5PX, **N. Ireland,** tel.: +44/ 1232 250 666, fax: +44/1232 668375, E-mail: Shekhar.Sharma@dani.gov.uk
The managing body: Management Committee (MC). Action Web site: http://www.vtt.fi/bel/cost847

The **main objective** of this Action is to develop environmentally friendly production technologies for the textile industry by using enzymatic processes. By using these biotechnical methods, energy or chemicals can be saved or, alternatively, the final product quality can be improved. In the COST action, new applications using enzymes acting on both cellulose- and protein based textile materials will be studied and developed. This will be achieved by exchanging research information within European research units active in textile biotechnology oriented research.
The **secondary objectives** of the Action are the following:

- to increase basic as well as applied knowledge required to set up quality standards for assessing flax fibre using physical, chemical and instrumental techniques. Biochemical, spectroscopic and thermal methods would be compared and contrasted with physical methods and the most suitable techniques would be developed for use by the industry.
- to develop standards and to support the fledgling non-textile end-users by providing quality characteristics for flax assessment.
- understanding of the structure-function relationships of textile fibres. Special emphasis is put on understanding the effects of targeted surface specific modifications obtained with enzymes on technical properties of textile fibres
- evaluation of the potential of existing and novel enzyme activities on the properties of textile fibres. These will eventually lead to development of novel biotechnical process stages for textile industry.

The structure of the Action:

WG	Short name	WG leader
1. Quality assessment of natural fibres	QUALITY	Prof. S. Sharma, UK
2. Bioprocessing of bast fibres	BAST FIBRES	Prof. R. Kozlowski, Poland
3. Bioprocessing of cellulosic fibres	CELLULOSIC FIBRES	Dr. A. Cavaco-Paulo, Portugal
4. Bioprocessing of protein fibres	PROTEIN FIBRES	Dr. E. Heine, Germany
5. Biotreatment of effluents	EFFLUENTS	Dr. Georg Gübitz, Austria

Note: the WG/1 is led by Prof. S. Sharma, UK-the chairman of the Quality Working Group of the FAO/ESCORENA Network and WG/2 is led by Prof. Dr. Ryszard Kozlowski-the Coordinator of the FAO/ESCORENA Network.

The main topics of the scientific work within each WG are presented below:

1. Quality assessment of textile materials
- 1.2. Modification of fine characteristics of fibres for different end-use applications
- 1.3. Quality assessment of fibre and yarn with physical, chemical and instrumental methods

2. Bioprocessing of bast fibres
- 2.1. Enzymatic retting of bast fibres
- 2.2. Enzymatic finishing of linen

3. Bioprocessing of cellulosic fibres
- 3.1. Bioscouring of cotton
- 3.2. Enzymatic finishing of cellulosic materials such as cotton, viscose, Lyocell, Tencel

4. Bioprocessing of protein fibres
- 4.1. Enzymatic scouring of wool
- 4.2. Enzymatic finishing of wool
- 4.3. Enzymatic processing of other protein fibres

5. Biotreatment of effluents
- 5.1. Microbial and enzymatic degradation of textile dyes
- 5.2. Treatment of bleaching effluents with catalases

5.3. Aerobic and anaerobic biotreatment of textile effluents

COST 847 Textile Quality and Biotechnology

The latest news regarding the COST action 847 activities

The last Management Committee (MC) of this Action took part on 17.5.2002, in Barcelona, Edifici Vèrtex**,** Barcelona Campus of the UPC (Universitat Politécnica de Cataluña). The future plans: 2002 – 2nd Annual Workshop, Italy, Como, 10-11.10.2002, 2003: WG's 2, 3, and 5, Czech Rep., May 2003 possibly combined to a textile conference; MC with WG's 1 and 4, Bulgaria, May 22-23, 2003; 3rd Annual workshop, Greece, September 25-26, 2003 (scientific focus).
Several applicable STSM already took part and the reports are submitted and presented during Working Groups meetings and Annual Workshops.
It was underlined that all valuable information related to COST Action 847 is continuously included in the web site http://www.vtt.fi/bel/cost847
It is important to present activities of related networks including the FAO European Cooperative Research Network on Flax and Other Bast Plants, and links to their www-pages (to be added to the Action internet-site).

COST ACTION 847. PROPOSAL REGARDING A "DISTRIBUTED SAMPLE LIBRARY"

[Activity of WG/1 Quality assessment of natural fibres]

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INTRODUCTION

The situation regarding the characterisation of flax- and other bast fibres is certainly not satisfactory.
Many years ago, a working group within ISO TC 38 tried to make progress in the normalisation of tests on flax fibres. Only one ISO standard could be established (fineness, airflow method); for some other properties working documents were proposed. Due to frustration (endless discussions, little output, ...) and lack of interest from industry, it was decided to stop the activities of this working group.

Within the FAO Network, statistical assessment of the data obtained during the interlaboratory trials (FAO Round Robin Tests, 1997) showed considerable differences between the involved laboratories for most of the selected characteristics. The origin of these differences could partially be attributed to the heterogeneity of the samples. The main reason however was that most participants conducted the measurements in the way that their institute had been using before, and thus did not follow a common methodology. For this reason it was concluded not to continue the Round Robin test. No further progress was made concerning the definition of a common methodology.

Since then, each laboratory continued using their own methods and procedures. Some of the labs became certified for some tests. In this case, they established their own "internal reference materials" in order to control the instruments and procedures (control charts). Also for research purposes (new analysis methods, process studies, …) the labs again established "internal" reference materials and reference data.

Reactivating the ISO or CEN workgroup could offer a solution to the problem; however this requires a lot of time and efforts, and is a long-term approach.

OBJECTIVE

We propose a collaboration between the COST partners to set up a "distributed" sample library (as a first step towards a "virtual laboratory" on flax and other bast fibres). Through a central database, covering the contents of each local library, the partners could easily exchange samples, which would offer several advantages for all members:

- low (and distributed) cost for maintenance of the library,
- different types of natural fibres,
- fibres from plants grown in the different countries,
- samples obtained under different processing conditions, ...
- an "open library" (no monopoly),
- useful for research purposes (for example to widen the scope of one's research),
- useful to compare analysis methods,
- stimulating collaboration between the partners within the COST Network,

THE "DISTRIBUTED SAMPLE LIBRARY"

Each member would select and take care of the samples in his own (local) library. Each member is completely free to decide what samples he wants to include. The selected samples have to be reasonably homogeneous. The local libraries would contain samples that are representative for a species, variety, country, processing stage, ... Each institute will maintain its local library in good condition and keep an inventory list of the samples. Each sample will be labelled by the local institute, indicating for example: date, species and variety, origin, processing stage, available quantity that can be distributed to other labs.
The local institute may then "declare" the availability of the samples by input on the central database, indicating the information on the label. If the institute has analysed the sample, it could also mention this information (measured properties, however no data). The institute will keep record of the obtained results, including the measurement-procedures (in English).

If another member consults the central database, and finds some available samples that are of interest to him, he can contact the local library, ask for supplementary information (measured properties,...), ask to send him a specified quantity. Information about the measured data and procedures can eventually be exchanged under conditions defined by mutual agreement between both parties.

The "receiver" pays the costs for transport + a fee for the "provider" (for example 10 Euro/sample?). The "provider" updates his local inventory list and the central database (quantity available).

> **Note: institutes or companies that give no input to the system (have no local library) could ask and receive samples, but at a much higher cost ?**

Proposition for further steps

1. This proposal is sent by Coordination Centre of the Network to the members of the COST network for comments (other Network members are invited as well!!)
2. Feedback from the members of COST about this proposal to Coordination Centre of the Network
3. Update of the proposal
4. Updated proposal is sent to the members of COST
5. Members who decide to participate inform the coordinator of this action
6. Decision to proceed or stop the action by the members
7. Definition of a common template for input of information
8. Each participating member gives input (using the template) about available samples, and sends it to the coordinator of the action.
9. The coordinator collects all inputs and sends a consolidated table to all members
10. Points 8 and 9 are repeated 5 times (interval of 1 month, total period of 6 months)
11. Evaluation after 6 months, and decision to proceed or stop the action
12. If decided to proceed, set up of a central database on the internet (by external company?) and collaboration agreements between the participating members
13. Continuation of the action with the internet database during a period of for 6 –12 months
14. Evaluation (for example at a meeting of the COST action)
15. Decision to modify the tools, proceed or stop the action

Note: all comments are highly appreciated!!

NEWS REGARDING PUBLICATIONS ON NATURAL FIBRES

PUBLISHING ACTIVITY OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS since 1989

"NATURAL FIBRES – WLOKNA NATURALNE" – a Yearbook of INF

A publication that is probably the only one in the world which contains scientific publications regarding natural fibres (an English-Polish version yearbook), edited by the Institute of Natural Fibres – Coordination Centre of the FAO Network. The publication is advised by the international team of Honorary Editors: Mr. A.M. Allam/Egypt, Mr. A. Atanassov/Bulgaria, Mr. A. Bozzini/Italy, Mr. D. Cremaschi/Italy, Mr. A. Daenekindt/Belgium, Mr. D. M. El-Hariri/Egypt, Ms. U. Kechaiga/Greece, Mr. R. Kessler/Germany, Mr. P. Kolodziejczyk/Canada, Mr. J. Lappage/New Zealand, Mr. M.

Lewin/USA, Mr. B. Mac/Poland, Mr. G. Mackie/Northern Ireland, Mr. T. Matsuo/Japan, Ms. C. Morvan/France, Mr. R. V. Raghavan/ India, Mr. Shen Anjing/China, Mr. H. Tokura/Japan,]Mr. J.P. Trouvé/France, and Mr. V.V. Zhivetin/Russia.

Note: All scientists are welcome to publish relevant papers in this publication. Contact: Prof. Dr. Ryszard Kozlowski; fax/tel.: +48(0) 61 8417-830, E-mail: boint@inf.poznan.pl

EUROFLAX Newsletter

Information Bulletin *EUROFLAX Newsletter* – 17 issues since 1994 (400 printed copies, reaches subscribers and Network members in 51 countries), available from the Institute of Natural Fibres, Wojska Polskiego 71b, 60-630 Poznan, Poland, fax: +48 61 8 417 830, E-mail: boint@inf.poznan.pl.

PROCEEDINGS of the European Regional and Global Workshops:

- **"FLAX IN EUROPE",** Production and Processing, Poznan, 19- 21 June 1989 (available from the Institute of Natural Fibres)
- **"FLAX – AS A FIBRE AND OIL BEARING CROP",** Brno, Czechoslovakia, 18-20 June 1991 (available from AGRITEC, Research, Breeding & Services Ltd, Zemědelská 16, 787 01 Šumperk**,** The Czech Republic, E-mail: agritec@agritec.cz)
- **"FLAX IN THE WORLD"** Bonn, Germany, 15-17 June 1993 (available from the Institute of Natural Fibres)
- **"PRODUCING FOR THE MARKET"** – Proceedings of the 4th European Regional Workshop on Flax, 25-28 September 1996, Rouen, France (available at the Institut Technique du Lin 5, Rue Cardinal Mercier, 75009 Paris, France, tel.: +33/1 42 80 40 56, fax: +33/ 1 45 26 24 27)
- **"BAST PLANTS IN THE NEW MILLENNIUM"** – Proceedings of the Second Global Workshop, 3-6 June, 2001, Borovets, Bulgaria

PROCEEDINGS of conferences (almost all available from the Institute of Natural Fibres, Poznan, Poland):

- The First Flax Genetic Resources Workshop, Poznan, Poland, 9-10 November 1993
- The Second Flax Genetic Resources Workshop Brno, 8-9 November 1994
- First Workshop of the Non-Textile Applications of Flax Working Group 14-15 November 1994, INF, Poznan, Poland
- Modern Flax Processing – The First Workshop of the Extraction and Processing Working Group, 15-16 March 1995, INF, Poznan, Poland
- Breeding for Fibre and Oil Quality in Flax – Proceedings of the Third Meeting of International Flax Breeding Research Group 7-8 November 1995, Saint-Valéry-en-Caux, France (a few copies are available from Eng. Jean-Paul Trouvé , CETEAL, Saint-Pierre-Le-Viger, 76740 FONTAINE-LE-DUN, France, tel.: +33/ 35974133, fax: +33/35971318
- Proceedings of the Symposium: Flax and Other Bast Plants, held at the Institute of Natural Fibres, 30.09 and 1.10.97, Poznan, Poland
- Newsletter of the ad Hoc Research Group (the Group acted from 1989 to June 1993) – 9 issues
- Proceedings of the Hemp, Flax and Other Bast Fibrous Plants Production, Technology and Ecology Symposium, 24-25 September 1998, Poznan, Poland
- Proceedings of the Bast Fibrous Plants Today and Tomorrow, Breeding, Molecular Biology and Biotechnology Beyond 21st Century, 28-30 September 1998, St. Petersburg, Russia
- Book of abstracts of the Fifth International Conference on Frontiers of Polymers and Advanced Materials (ICFPAM) and NATO Advanced Research Workshop on Polymers and Composites for Special Applications; 21 and 25 of June 1999, Institute of Natural Fibres, Poznan, Poland
- Research into New Uses of Natural Fibres (1999). Seminar Materials of the FAO Intersessional Consultation on Fibres, 15-16 November 1999, Institute of Natural Fibres, Poznan, Poland
- Innovative Hemp Production and Hemp Products (The News in Hemp Breeding, Cultivation, Harvesting and Processing). Seminar Materials. 23 February 2000, Institute of Natural Fibres, Poznan, Poland
- The Natural Fibres. Wlokna Naturalne. Special Edition Vol. XLIV 2000. Special Jubilee Edition – Proceedings of the International Scientific Session: "Natural Fibres Today and Tomorrow", held on 28 and 29 June 2000, Institute of Natural Fibres, Poznan, Poland
- Proceedings of the Conference Bast Fibrous Plants at the Turn of Second and Third Millennium, 18-22 September, 2001, Shenyang, China

OTHER RELATED PUBLICATIONS

Industrial Crops

- Newsletter of IENICA – The Interactive European Network for Industrial Crops and their Application, available at: http://www.ienica.net/
- IPGRI Newsletter for Europe, published by the International Plant Genetic Resources Institute, Rome, Italy. E-mail: m.colas@cgiar.org
- FIBRES &TEXTILES in Eastern Europe, published by the Institute of Chemical Fibres, Lodz, Poland, E-mail: iwch@mazurek.man.lodz.pl
- Green – Tech Newsletter. Edited by Prof. Dr. Hans Derksen – chairman of the Platform for Renewable Raw Materials.P.O. Box 822, 3700 AV Zeist, The Netherlands. Fax: +31 (0) 30 691 73 94

- Fabulous Fibre. The Natural Fibre Centre Newsletter. Olds College Centre for Innovation Natural Fibre Centre (OCCI), 4500 -50th Street, Olds, Alberta, Canada T4H 1R6, Telephone: (403) 507-5206, FAX: (403) 507-7977, E-mail: relvestad@admin.oldscollege.ab.ca, www.occi.ab.ca
- Journal of Ivanovo State Textile Academy, Ivanovo, Russia: Scientific and Technical Journal – TECHNOLOGY OF TEXTILE INDUSTRY (available at http://education.ivanovo.ru/IGTA/OURJOURN.htm)
- INTERNATIONAL TEXTILE BULLETIN and NONWOVENS/INDUSTRIAL TEXTILES. Published by ITS PUBLISHING. INTERNATIONAL TEXTILE SERVICE.P.O.Box, CH-8952 Schlieren/Zrich, Switzerland
- CSL News, published by Central Science Laboratory, Sand Hutton, York, UK. E-mail: science@cls.gov.uk

Hemp

- Journal of Industrial Hemp – the journal of the IHA (E-mail: iha@euronet.nl) – International Hemp Association in the Netherlands, edited by The HAWORTH Press, INC, New York, London, Norwood (Australia), E-mail: BCohen7719@aol.com, http://www.haworthpress.com
- Journal of Cannabis Therapeutics– a sister journal of Journal of Industrial Hemp, edited by The HAWORTH Press, INC. (New York, London, Norwood (Australia), E-mail: BCohen7719@aol.com
- Leson Gero, Pless Petra: Hemp Food and Oil for Health – Your Guide to Cooking, Nutrition, and Baby Care; HEMPTECH, 64 p., Sebastopol 06/99
- Roulac John W.: Industrial Hemp, Practical Products – Paper to Fabric to Cosmetics. HEMPTECH/Chelsea Green Publishing, 50 p., Sebastopol 06/96 [john@hemptech.com, HEMPTECH, (707) 823-2800, www.hemptech.com, P.O. Box 1716 Sebastopol, California 95473 <+> Fax (707) 823-2424, Fax orders: (419) 281-6883, E-mail orders: orders@bookmaster.com.
- Bocsa I., Karus M.: The Cultivation of Hemp – Botany, Varieties, Cultivation and Harvesting. HEMPTECH/Chelsea Green Publishing, 186 p., Sebastopol 02/98
- Grotenhermen F., Karus M., Lohmeyer D.: Hemp Foods and THC Levels: A Scientific Assessment. HEMPTECH/ Chelsea Green Publishing, 67 p., Sebastopol 10/98
- THE HEMP COMMERCE & FARMING REPORT, (c) 1999 AHEM, ARTHUR HANKS. Contact at the E-mail address: jfreeman@ssm.net , http://www.hempreport.com
- John E. Dvorak, E-mail:boston.hemp@pobox.com invites you to visit the archives by performing a DejaNews power search for Dvorak, hemp, and archives: http://www.dejanews.com/home_ps.shtml
- www.maff.gov.uk/farm/acu/acu.htm -there are several good papers related to utilization of natural fibres on the UK MAFF web site
- H. Burczyk: Hemp Cultivated for Seeds- The Manual for Hemp Farmers (available at the Institute of Natural Fibres, Poznan, Poland)

INFORMATION ABOUT INTERNATIONAL CONFERENCES ON NATURAL FIBRES

Meetings and Conferences held in 2002

- September 8-13, 2002. ***The Second International Conference on Sustainable Agriculture for Food, Energy and Industry***, Institute of Botany, Chinese Academy of Sciences, Beijing, China.
- September 10 and 11, 2002. ***International Conference „Production, Processing and Utilisation of Natural Fibres“*** in Potsdam, Germany. Event organised by Agricultural Engineering Bornim. Contact: Prof. Dr.-Ing. habil. Chr. Fürll, INSTITUT FÜR AGRARTECHNIK BORNIM e.V. (ATB), Max-Eyth-Allee 100, D-14469 Potsdam, Germany, Tel:++49(0)331/5699-310, Fax:++49(0)331/5699-849, Internet: http://www.atb-potsdam.de
  Email: cfuerll@atb-potsdam.de
- September 17 – 20, 2002, Flax workshop of the FAO European Cooperative Research Network on Flax and Other Bast Plants connected with the 60th anniversary of AGRITEC Ltd. company (1942 – 2002). ***Mapping of European germplasm for International Flax Data Base creation, use in breeding for different flax and linseed varieties***, Sumperk, the Czech Republic.
- August 29, 2002. ***Workshop on Applications and use of plant fibres for job creation, rural and industrial development.*** CSIR Conference Centre, Pretoria, South Africa. In connection with World Summit on Sustainable Development
- September 30 to Oct 02. ***Polydays 2002,*** organised by the “Berlin-Brandenburgische Verband für Polymerforschung“ cordially invites all scientists in the field of Polymer Science to take part in the meeting in Berlin. You will find more detailed information regarding this conference at http://www.polydays2002.tu-berlin.de.
- October 6 to 9, 2002. ***The International Textile, Clothing&Design Conference,*** the Faculty of Textile Technology, University of Zagreb, Dubrovnik, Croatia. Contact person: Prof. Zvonko Dragcevic: E-mail: zvonko.dragcevic@zagreb.tekstil.hr, http://www.itcdc2002.hinet.hr/

2003

- June, 6-7, 2003. Flax workshop connected with the 50th anniversary of Experimental Farm of the Institute of Natural Fibres in Sielec Stary (1953-2003) entitled: *"Evaluation of economical and agricultural value of fibre and oil flax cultivars grown in Europe",* Poznan/Sielec Stary, Poland
- June 30-July 2, 2003. ***Advanced Flexible Materials and Structures: Engineering with Fibres.*** The FIBER SOCIETY 2003 CONFERENCE. Loughborough University, Loughborough, UK. Organised by Dr. Memis Acar, Wolfson School of Mech and Manu Engineering, Leics., UK. Tel.: +44 1509 227533, Fax: +44 1509 227648
- March 12-16, 2003 (date to be confirmed) ***Green Chemistry International Exhibition and Conference***. Florence, Leopolda Station, Italy. Contact person: Mr. Cesare Tofani, FIBRANOVA, v. Belvedere 9/a, 56035 LARI, ITALY, Tel. Direct line +39 0587 687083, Fax : +39 0587 687973, Email..fibranovact@tin.it
- September 11-12, 2003. 4th International Symposium "Materials from Renewable Resources". Erfurt Exhibition Centre. Germany. Organised by Messe Erfurt AG < vogel@messe-erfurt.de> and Thüringisches Institut für Textil-und Kunststoff-Forschung e.V., Rudolfstadt, Germany. Contact person: Dr. Markus Schade <schade@titk.de>, (www.narotech.de) with EU project IENICA involvement.
- December 1-4, 2003. ***Flax and Allied Bast Fibre Plants for Human Welfare***. National Research Centre (NRC), Cairo, Egypt. Organised by: NRC and the FAO European Cooperative Research Network on Flax and Other Bast Plants (see first call for papers on page 8)

Conferences on composites

- 30 June-4 July 2002. ***MODEST 2002. 2nd International conference on Polymer Modification, Degradation and Stabilisation.***, Budapest, Hungary. Contact: E-mail: modest@mail.bme.hu, http://www.bme.hu/modest
- July 1-6, 2002. ***Ninth International Conference On Composites Engineering, ICCE/9*** San Diego, USA. Contact: Prof. Dr. David Hui, USA, E-mail: dhui@uno.edu, http://www.uno.edu/~engr/composite
- September 1 to 4, 2002. ***Fourth International Symposium on Natural Polymers and Composites – ISNaPol 2002***.Hotel Fazenda Fonte Colina Verde, São Pedro, SP, Brazil homepage http://www.cnpdia.embrapa.br/ISNAPOL2002.html
- June 10 – 15, 2003, ***The Seventh International Conference on Frontiers of Polymers and Advanced Materials (ICFPAM)***, Bucharest, Romania. Contact person in Romania: Prof. Marian Apostol, Institute of Atomic Physics Magurele, Bucharest, Romania, E-mail: apoma@theory.nipne.ro
- July 20-26, 2003.***Tenth International Conference on Composites/Nano Engineering***, ICCE/10 Conference, in New Orleans, www.uno.edu/~engr/composite

International Fairs:

- HANF-EXPO-CHANVRE.02 and CHANVRE-INFO. Presentation of trade of products derived from hemp. See: http://www.chanvreinfo.ch/en/
- April 8 – 10, 2003.Techtextil – International Trade Fair for Technical Textiles and Nonwovens connected with 11th International Techtextil Symposium (7 to 10.04). Frankfurt am Main, Germany. Contact: Ms. Julia Brinek/Katrin Klepsch, tel.: +49/69 7575- 6738/5822, fax: +49/69 7575 – 6950. E-mail: julia.brinek@messefrankfurt.com.TT0302-e-Call for Papers (***note:*** it is possible to submit your entry in scope of research and new applications and products by January 17, 2003 to the Techtextil Innovation Prize 2002)
- Trade Fair for Renewable Resources, technologies and Products will be running parallel to the symposium from 11 to 13 September 2003 in the Erfurt Exhibition Centre (www.narotech.de)

STATISTICAL DATA ON FLAX

FLAX CULTIVATED AREA [ha]

Fiber Flax

	1996**	1997	1998	1999	1999 [acres]	2000	2001
AUSTRIA	1105*	*700	*635	*350	865	*450	*130
BELARUS	78500°	73600	80000	***70000	172977	81800	
BELGIUM	11188	11654*	**11211	**12176	30024	****13355	****16990
BULGARIA	300	200	***58	***58	143	300	210
CHINA	***94320	***101000	***101000	***101000	249,581		
CZECH REPUBLIC	7300	2155	4117	6348	15,687	6302-linseed; 2240-fibre flax	7095
DENMARK	200	*57	*44	11	27	*45	*19
EGYPT**	9676	8714	14000	14500	25,831		
ESTONIA	°	200	***323	115		240	27
FINLAND	490	944	613	850	2,100	*1016	*405
FRANCE	44556*	45096	*43708	*49129	121,403	****55629	****67970
GERMANY	4500	*1362	*416	*570	1,409	402*	*297
IRELAND		42	1*	*0	0	0	****0
Italy							****1
LATVIA	1240	1600	***2200	***2000	5,436	300-linseed; 1600-fibre flax	
LITHUANIA	5600	6100	6500	8600	21,251	8600	9 600
NETHERLANDS	3823*	*4089	*3306	*3570	8,822	*4016	*4415
POLAND	4383	2660	2548	1223	3,022	5093	5100 ha (fibre flax 4520 ha, linseed 600 ha).
PORTUGAL	°	*1125	*1500	4678*	11,560	****3522*	****0
RUSSIA	153460	113860	107340	104050	256,032	107 610	127 361
SPAIN	44000	*49045	*87727	*122400	302,463	****13595	*342
SWEDEN	°	*47	*320	*1327	3279	*21	****32
UKRAINE	54500	39975	31200	***21900	54,117	19300	28280
UNITED KINGDOM	20500	*19080	*16700	*14000	34,595	****11816	*4430
Total EU countries						****103867	****94631

Source: Data provided by relevant countries

*/A. Daenekindt: Algemeen Belgisch Vlasverbond, Oude Vestingsstraat 15, B-8500 Kortrijk, Belgium

**/D.M. El-Hariri, Depart. of Fibre Crops, NRC, Egypt

***/FAOSTAT Statistical Database Results 1997 http://apps.fao.org

**** Mr. Jordi Petchamé Ballabriga, Administrateur, Olives, huile d'olive et plantes textiles, D.G. VI.C.4 - Loi 130 7/126, European Commission, Rue de la Loi 200, B- 1049, Bruxelles, Belgium

note : *in all tables the mark % means data not available*

LINEN MARKET/PRICES IN THE EU

Prices of main products and by-products of flax in Belgium (similar as in other countries of the EU)
Source: VLAS Berichten, the newspaper of the Algemeen Belgisch Vlasverbond, issue No: 14; July 12, 2002, Oude Vestingsstraat 15, 8500 Kortrijk, Belgium, Director; Mr. Albert Daenekindt. The subscription of this newspaper can be ordered at the above address. Contact: fax: + 32/56/22 79 30, E-mail: bvlasverbond@skynet.be

Scutched flax fibre

Water-retted		**Dew-retted**	
long fibre			
Quality	**Prices EURO/100kg**	**Quality**	**Prices EURO/100kg**
lower quality	up to 223,10	lower quality	123,95 – 198,31
medium quality	225,58 – 272,68	medium quality	200,79 – 235,50
		better quality	237,98 – 272,68
very good quality	275,16 – 297,47	very good quality	275,16 – 297,47
short fibre			
lower quality up to 24,79 EURO/100kg			
higher quality 27,27 – 37,18 EURO/100kg			
by-products			
• wasted parts of the straw; dew retted price: up to 3,10 EURO/100kg • wasted parts of the straw price: 3,72 EURO/100kg • by-products from deseeding price: 2,48 EURO/100kg • short scutched fibre wastes: up to 9,92 EURO/100kg • shives used for particleboard production: 1,49 – 3,72 EURO/100 kg			

EUROPEAN SUBSIDY FOR THE CULTIVATION OF FLAX AND HEMP

*Submitted by Dir. A. Daenekindt: Algemeen Belgisch Vlasverbond, Oude Vestingsstraat 15, B-8500 Kortrijk, Belgium**1999***

Idem 1998 and 1997, with the exception that the amounts are no longer in terms of Ecu but Euro.
Subsidy per hectare (gross = net): **815,86 Euro** (25% farmer/75% scutcher).
2000
Subsidy per hectare (gross = net): **795,46 Euro** (25% farmer/75% scutcher).
2001
With the crop 2001 started a new and completely modified Common Organisation of the Markets in flax and hemp, containing a subsidy for the grower and a subsidy for the primary processor of the flax straw.
1. Grower
Flax and hemp are included in the subsidy system for some arable crops (including the obligation to lay fallow 10% of the arable crops area).
Subsidy 2001 (basis) for fibre flax and hemp: 75,63 euro/ton.
This amount has to be multiplied by the "historic yield for cereals" that has been fixed for each agricultural region. Belgium, for instance, has 13 different agricultural regions, and the subsidy amount for flax fluctuated between 509 and 275 euro per hectare.
2. Primary processor (scutcher)
A subsidy is given to the primary processor for the quantity of fibres that is produced:
– 100 euro per ton for long flax fibres;
– 90 euro per ton for short flax fibres and hemp fibres.
3. Additional subsidy
In some regions (Netherlands, Belgium and North of France) an additional subsidy is assigned to the fibre producer:
– for northern regions: 120 euro per hectare;
– in southern regions: 50 euro per hectare.
2002
Same system as for the crop 2001, but change of some subsidy amounts.
1. Grower: basis subsidy 63 euro/ton (instead of 75,63 euro);
2. Processor (scutcher):
– 160 euro per ton for long flax fibres;
– 90 euro per ton for short flax fibres and hemp fibres.
3. Additional subsidy (NL/B/F)
– for northern regions: 120 euro per hectare;
– in southern regions: 50 euro per hectare.

COUNTRY DATA ON FIBRE FLAX

BELARUS

	1995	1996	1997	1998	1999	2000
Cultivated area [ha]	96800	78500	73600			81800
Straw yield [t/ha]	2.80	2.80				
Long fibre yield [t/ha]	0.25	0.18				
Long fibre production [t]	15500	14.300				
Short fibre yield [t/ha]	0.36	0.44				
Short fibre production [t]	35100	34600				
Percentage of dew retting [%]	99.2	97.50				
Mill consumption of flax [t]	20800	23800				
Seed yield [t/ha]	0.24	0.30				
Yarn production [t] (wet + dry spinning)	16056	16600				
Production of textiles [1000 m]	35100	35800				
Particleboards production [m^2]	3000	2237				
Export of seed [t]	°	°				
Export of yarn [t]	°	–				
Export of fibre [t]	194000	18100				
Export of linen textiles (fabrics) [1000 m]	3900	1260				

sent by: S.P. Tkachev, A.V. Krugliakov, A. Lopatyniuk, BELINTERGROPROM, Minsk, Belarus (data from 1993-1995),
P.P. Gulevich, Ministry of Agriculture of the Rep. of Belarus, Minsk, Belarus (1996)
I.J. Jarmolovitch, Ministry of Statistics ands Analysis of RB, Minsk, Belarus (2000)

BULGARIA

	1996	1997	1998	1999	2000	2001
Cultivated area [ha]	300	200	58	58	300	210
Straw yield [t/ha]	3.05	2.5				2.4
Long fibre yield [t/ha]	°	°				
Long fibre production [t]	29	12	12			25
Short fibre yield [t/ha]	°	°				
Short fibre production [t]	341	33	49			57
Percentage of dew retting [%]	0	0				
Mill consumption of flax [t]	1471		697			116
Seed yield [t/hm^2] [t/ha]	0.72	0.40				
Yarn production [t] (wet + dry spinning)	1045	456	398			84
Production of textiles [1000 m]	2598	973	1935			1080
Particleboards production [m^2]	0	0				
Export of seed [t]	0	0				
Export of yarn [t]	21	0				
Export of fibre [t]	0	0				
Export of linen textiles (fabrics) [1000 m]	257	350	577			600
Export of cloth (1000 m^2]	1095	405	639			903
Import of fibre [t]	689	396	884			82
Import of yarn [t]	40	°	50			3
Import of textiles [1000 m]	°	°				
Import of seed [t]	°	°				16
Import of linen cloth [1000 m]	°	°				

sent by: Dr. A. Balabanova, AgroBioInstitute, 2232 Kostinbrod-2, Bulgaria

CZECH REPUBLIC

	1997	1998	1999	2000	2001	2002
Cultivated area [ha]	2155	4117	5348	6302	7095	5900
Harvested [ha]	2090	3719	5232	5911	5566	
Straw yield [t/ha]	3.19	3.01	3.34	2,36	3,23	
Long fibre yield [t/ha]	0.32	0.3	0,39	0,35	0,24	
Long fibre production [t]	1739	1235	2098	2235	1591	
Short fibre yield [t/ha]	0.53	0.5	0,53	0,42	0,44	
Short fibre production [t]	2586	1835	2797	2661	3141	
Percentage of dew retting [%]	100	100	100	100	100	
Mill consumption of flax [t]	17354	11200	17484	16811	18526	
Seed yield [t/ha]	0.51	0.51	0.56	0,50	0,5	
Yarn production [t] (wet + dry spinning)	4081	3850	4835	5301	4300	
Production of textiles [1000 m]	10166	12160	*	*	*	
Particleboards production [m^2]	31070		0	0	0	
Export of seed [t]	1100	730	1340	3421	2526	
Export of yarn [t]	1487	1202	1364	1839	1430	
Export of fibre [t]	168	100	90	267	207	
Export of linen textiles (fabrics) [1000 m]	8124	°	*	*	*	
Export of cloth (more than 85% linen) [t]	1705	1830	2138	2470	1996	
Export of cloth (less than 85% linen) [t]	211	180	184	264	183	
Import of fibre [t]	1516	2248	2925	3001	3303	
Import of yarn [t]	81	79	349	456	279	
Import of textiles [1000 m]	1354	°	*	*	*	
Import of seed [t]	40	771	561	449	356	
Import of linen cloth (more than 85% linen) [t]	289	16	512	609	514	
Import of linen cloth (less than 85% linen)[t]	58	28	76	103	78	

sent by: H. Suchomelová, P. Šmirous, S. Krmela, ATOK Praha, Flax Union CR, Šumperk-Temenice, Czech Republic

ESTONIA

	1995	1997	1999	2000	2001
Cultivated area [ha]	185	323	115	137[*)]	27[*)]
Straw yield [t/ha]	0,870	0,198	0,513	0,577	3,9[**)]
Long fibre yield [t/ha]					
Long fibre production [t]	°				
Short fibre yield [t/ha]					
Short fibre production [t]	°				
Percentage of dew retting [%]	°				
Mill consumption of flax [t]	°				
Seed yield [t/ha]	°0,373	0,303	0,513	0,212[*)]	
Yarn production [t] (wet + dry spinning)	°				
Production of textiles [1000 m]	°-	10	3910	7070	
Particleboards production [m^2]	°				
Export of seed [t]	°	276	452	71	317[3)]
Export of yarn [t]	°34358	13868	50970	132339	99786[3)]
Export of fibre [t]	0399	454	236	1282	2002[3)]
Export of linen textiles (fabrics) [1000 m]	°				
Export of cloth [1000 m^2]	°17217	180	166217	249532	296539[3)]
Import of fibre [t]	33322	5123	62834	137460	148850[3)]
Import of yarn [t]	1662	886	19775	22568	6895[3)]

sent by: Mr. Einar Kikkas, Department of Agriculture, Ministry of Agriculture, Tallinn, Estonia

FINLAND

	1996	1997	1998	1999	2000	2001
Cultivated area [ha]	490	943	800	850	1067	405
Straw yield [t/ha]	2095					
Long fibre yield [t/ha]	°					
Long fibre production [t]	°					
Short fibre yield [t/ha]	°					
Short fibre production [t]	°					
Percentage of dew retting [%]	°	100	100	100	100	100
Mill consumption of flax [t]	°	300	300	300	300	300
Seed yield [t/ha]	°					
Yarn production [t] (wet + dry spinning)	°					
Production of textiles [1000 m]	°					
Particleboards production [m^2]	°					
Export of seed [t]	°					
Export of yarn [t]	°					
Export of fibre [t]	°					
Export of linen textiles (fabrics) [1000 m]	°					
Export of cloth (less than 85% linen)[t]	°					
Import of fibre [t]	°					
Import of yarn [t]	°					
Import of textiles [1000 m]	°					
Import of seeds [t]	°					
Import of linen cloth (more than 85% linen) [t]	°					
Import of linen cloth (less than 85% linen) [t]	°					

sent by: Juha Pirkkamaa, Agropolis Ltd, Agropolis-Engineering, FIN-31600 Jokioinen, Finland

LATVIA

	1996	1997	1998	1999	2000
Cultivated area [ha]	1240	1600	220/2200	200/2000	300/1600
Straw yield [t/ha]					
Long fibre yield [t/ha]	0.59	0.62	0.62	1.06	0.77
Long fibre production [t]	790	960	1340	2100	1100
Short fibre yield [t/ha]	°				
Short fibre production [t]	°				
Percentage of dew retting [%]	°				
Mill consumption of flax [t]					
Seed yield [t/ha]	0.33	0.23	0.30	0.29	0.32
Yarn production [t] (wet + dry spinning)	°				
Production of textiles [1000 m^2]	623	606	411	545	262
Particleboards production [m^2]	°				
Export of seed [t]	-	-	-	-	0.0
Export of yarn [t]	136.8	739.2	632.7	790.9	829.4
Export of fibre [t]	362.8	913.2	844.8	830.7	679.5
Export of linen textiles (fabrics) [%]	…	…	…	…	…
Export of cloth [1000 m^2]	….	516.3	1584.5	1613.9	2911.4
Import of fibre [t]	438.6	2002.3	1786.3	2087.0	1715.0
Import of yarn [t]	15.9	36.5	465.7	360.2	794.4
Import of textiles [1000 m]	…	…	…	…	…
Import of seed [t]	104.7	135.0	82.6	159.7	128.5
Import of linen cloth [1000 m]	…	259.3	221.0	264.6	480.9

sent by U. Apels, Department of Information, Ministry of Agriculture of the Republic of Latvia, Republic Sq. 2, Riga, LV-1981,

LITHUANIA

	1997**	1998	1999**/	2000**/	2001
Fibre Flax Cultivated area [ha]	6100	6500	8 800	8 600	9600
Fibre Flax Harvested area [ha]					3637
Straw yield [t/ha]	3.1	3.4	1,8	3,2	3,8
Long fibre yield [t/ha]	0.33	0.36	0,20	0,34	0,38
Long fibre production [t]	2030	2300	1 720	2 900	1400
Short fibre yield [t/ha]	0.50	0.54	0,30	0,50	0,59
Short fibre production [t]	3033	3500	2 580	4 300	2130
Percentage of dew retting [%]	100	100	100	100	
Mill consumption of flax [t]	5063	5800	4 300	7 200	
Seed yield [t/ha]	0.47	0.43	0,42	0,31	0,35
Yarn production [t] (wet + dry spinning)	2917		3 128	2 735	
Production of textiles [1000 m]	11781		20 000	17 700	
Particleboards production [m^2]	–				
Export of seed [t]	–				
Export of yarn [t]	204		219	162	
Export of fibre [t]	199			9 380	
Export of linen textiles (fabrics) [1000 m]	76				
Export of cloth (1000 m^2]	9098		15 800	14 486	
Import of fibre [t]	1399			8 385	
Import of yarn [t]	3				
Import of textiles [1000 m]	1				
Import of seed [t]	0	10			35
Import of linen cloth [1000 m]	–				

sent by: */ calculated data

**/ O. Jukneviciene, Minist. of Agricul., Dep. of Strategy of Plant Production, Prospekt Gediminasa 19, Wilnus, Lithuania; completed by Dr. Director Algimantas Endriukaitis, LIA – The Lithuanian Institute of Agriculture Upyte Research Station, Panevėžio, 7, Upyte Panevezys Distr., LITHUANIA

POLAND

	1997	1998	1999	2000	2001
Cultivated area [ha]	2660	2548	1223	5093	5100 ha (fibre flax 4520 ha, linseed 600 ha).
Straw yield [t/ha]	2.7	3.4	3,0		
Long fibre yield [t/ha]	2.2	0.6			
Long fibre production [t]	3289	2192[1]	759		
Short fibre yield [t/ha]	°	°			
Short fibre production [t]	2127	898.4[1]	196		
Percentage of dew retting [%]	100	100	100		
Mill consumption of flax [t]	6288	5074.8	1882		
Seed yield [t/ha]	0.4	0.7	0.6		
Yarn production [t] (wet + dry spinning)	3820	3024	889		
Production of textiles [1000 m]	11298	7658	4607		
Particleboards production [m^2]	°	°			
Export of seed [t]	°	°			
Export of yarn [t]	819	458			
Export of fibre [t]	°	°			
Export of linen textiles (fabrics) [1000 m]	7778	4875	69%		
Export of cloth [1000 m^2]	°	°	0		
Import of fibre [t]	1499	2052	803		
Import of yarn [t]	°	339	345		
Import of textiles [1000 m]	°	°	0		
Import of seed [t]	°	°	0		
Import of linen cloth [1000 m]	°	°			

Source: H. Smarzynski, Polish Flax Foundation, Institute of Natural Fibres, Poznan, Poland

*/ estimated data; **/ in 1000m^2; 1/ includes rural fibre produced in 1997 and 98

RUSSIA

	1996	1997	1998	1999	2000	2001
Cultivated area [ha]	153460	113860	107340	104050	107610	127 361
Straw yield [t/ha]	1.74	0.95	1.43	1.02	2.11	
Long fibre yield [t/ha][1]	0.43[4]	0.25[4]	0.43[4]	0.36[4]	0.55[1]	
Long fibre production [t][1]	58990[2]	23400[2]	33540[2]	23700[2]	51170[2]	58000[2]
Short fibre yield [t/ha]	°	°				
Short fibre production [t]	°	°				
Percentage of dew retting [%]	°	°				
Mill consumption of flax [t]	°	°				
Seed yield [t/ha]	0.14	0.13	0.08	0.10[5]	0.17	
Yarn production [t] (wet + dry spinning) single -thread yarn	36632[3]	31565[3]	17093[3]	20108[3]	19806[3,4]	16787
Production of textiles [mln m^2]	111	105	68.8[1]	90,4[2]	113[4]	98,4
Particleboards production [m^2]	°	°				
Export of seed [t]	0.2	–	49			
Export of yarn [t]	212	906	433			
Export of fibre [t]	181	1934	969			
Export of linen textiles (fabrics) [1000 m]	12829[3]	13932[3]	30214[3]			
Export of cloth (1000 m^2]	–	–				
Import of fibre [t]	6764	11932[3]	11682			
Import of yarn [t]	49	570	456			
Import of textiles [1000 m]	4782[3]	5692[3]	61365[3]			
Import of seed [t]	24	19	147			
Import of linen cloth [1000 m]	°	°	°			

sent by: Alexander Goncharov, Deputy Chief Of Department Of Foreign States Statistics And International Cooperation Goskomstat Of Russia, Moscov, Russia

[1/]for 1ha harvested area; [2/]data for long fibred flax; [3/]unifilar linen production, [4/]data for I-X/2001

UKRAINE

	1996	1997	1998	1999	2000	2001	2002
Cultivated area [ha]	54500	39975	31200	21 900	1930	28200	28280
Straw yield [t/ha]	2.08	1,9	2,4		2.4	2.6	
Long fibre yield [t/ha]	0.10	0,12	0,155		0.19	0.18	
Long fibre production [t]	5440	4680	4836		2509	5076	
Short fibre yield [t/ha]	0.22	0.17	0.205		0.29	0.34	
Short fibre production [t]	11900	6196	6396		5597	8598	
Percentage of dew retting [%]	100	100	100		100	100	
Mill consumption of flax [t]	17000						
Seed yield [t/ha]	0.18	0.15	0.18		0.29	0.30	
Yarn production [t] (wet + dry spinning)	7630						
Production of textiles [1000 m]	19.80*						
Particleboards production [m^2]	90						
Export of seed [t]	°						
Export of yarn [1000 $ USA]	353						
Export of fibre [t]	°						
Export of linen textiles (fabrics) [1000 $ USA]	2813						
Export of cloth [1000 m^2]	°						
Import of fibre [t]	°						
Import of yarn [t]	°						
Import of textiles [1000 m]	°						
Import of seed [t]	°						
Import of linen cloth [1000 m]	°						

sent by Prof. Dr. :I. Karpets, Agriculture Institute of Ukrainian Academy of Agrarian Sciences, Chabany, Ukraine

*/ in mln m^2

STATISTICAL DATA ON LINSEED

LINSEED AREA HARVESTING [ha]

Linseed Area Harv [ha]	Year 1999
Total World	**3,489,786**
Total Europe	**598,111**
Linseed Area Harvesting in Individual Countries (ha)	
Afghanistan	39,000
Argentina	101,000
Australia	4,400
Bangladesh	69,820
Belarus	70,000
Belgium-Luxembourg	10,000
Brazil	17,000
Bulgaria	58
Canada	811,500
Chile	1,000
China	570,000
Croatia	15
Czech Republic	2,017
Ecuador	75
Egypt	15,000
Eritrea	3,000
Estonia	323
Ethiopia	71,000
France	44,500
Germany	110,048
Hungary	200
India	930,000
Iran, Islamic Rep of	744
Iraq	590
Italy	1,000
Kazakhstan	50,000
Kenya	900
Latvia	2,200
Lithuania	6,100
Mexico	2
Nepal	55,000
Netherlands	4,000
New Zealand	500
Pakistan	7,974
Poland	3,724
Romania	2,504
Russian Federation, in 1997 – 92,360; in 1998 – 60,500	61,250*
Slovakia	322
Spain	91,000
Sweden	14,100
Tunisia	2,200
Turkey	300
Ukraine	26,000
United Kingdom	101,000
United States of America	135,170
Uruguay	2,500
Uzbekistan	3,000

Source: FAOSTAT Database Results – http://apps.fao.org

* A. Surinov, General Director, State Commit. of the Rus. Federat. on Statist., (GOSKOMSTAT of Russia), Dep. of Foreign States Statistics and Intern. Cooper., Moscow, Russia

STATISTICAL DATA ON LINSEED (FLAXSEED)

Data about linseed cultivation area, provided by certain countries:

Czech Republic	1997	1998	1999	2000	2001	2002
Cultivated area [ha]	600	646	2251	1700	3280	2385

sent by: H. Suchomelová, P. Šmirous, S. Krmela, ATOK Praha, Flax Union CR, Šumperk-Temenice, Czech Republic

Finland	1997	1998	1999	2000	2001
Cultivated area [ha]	2207	2051	2079	1372	1558

sent by: Juha Pirkkamaa, Agropolis Ltd, Agropolis-Engineering, FIN-31600 Jokioinen, Finland

Latvia	1997	1998	1999	2000	2001
Cultivated area [ha]	1600	220	200	300	

sent by U. A: pels, Department of Information, Ministry of Agriculture of the Republic of Latvia, Republic Sq. 2, Riga, LV-1981,

Russia	1997	1998	1999	2000	2001
Cultivated area [ha]	92360	60500	62000	87630	

Sent by: Alexander Goncharov, Deputy Chief Of Department Of Foreign States Statistics and International Cooperation Goskomstat Of Russia, Moscov, Russia

STATISTICAL DATA ON INDUSTRIAL HEMP

HEMP HARVESTED AREA

Fibre Hemp Area Harvested [ha]	Year			
	1996	1997	1998	1999
Bulgaria		48	8	8
Canada	0***	0***	2000***	1200***
Chile	4,200	4,200	4,200	4,200
China	58,000***	15,000	15,000	15,000***
Croatia	14	14	14	14
Hungary	1,200***	900***	1,077	1,077
Korea, Dem People's Rep	17,000	17,000	17,000	17,000
Korea, Republic of	250	250	250	250
Romania	1,000***	2,000***	3,080	3,000***
Russian Federation	11,490*	9,490*	6260*	10,230*, 16,980*in 2000
Ukraine	4,000***	3,500***	2,000	2,000
Yugoslavia, Fed Rep of	679	1,000***	1,000***	1,000***

Source: FAOSTAT Database Results – http://apps.fao.org

*A. Surinov, General Director, State Commit. of the Rus. Federat. on Statist., (GOSKOMSTAT of Russia), Dep. of Foreign States Statistics and Intern. Cooper., Moscow, Russia

**H. Smarzynski, Polish Flax Foundation, Institute of Natural Fibres, Poznan, Poland

*** Michael Dr. Karus, nova –Institut für politische und ökologische Innovation, Nachwachsende Rohstoffe, Thielstr. 35, 50354 Hürth Germany

HEMP HARVESTED AREA IN EUROEPAN UNION COUNTRIES AND IN POLAND

	Fibre Hemp Area Harvested [ha]					
COUNTRY OF EU	1996*	1997*	1998*	1999*	2000/2001**	2001/2002**
Austria	661	938	974	289	287	860
Belgium			0	1	0	0
Denmark			26	23	7	7
Finland	2	53	1218	93	59	2
France	7588	10980	9682	9515	7700	6900
Germany	1362	2766	3553	3993	2967	1948
Italy	0	0	255	197	151	200
Ireland	0	23	28	22	6	0
Luxembourg	5	13	13	0	0	0
Netherlands	893	1322	1055	872	806	946
Portugal			770	185	4	0
Spain	1450	4828	19860	13473	6103	784
Sweden					0	0
UK	1697	2293	2556	1517	2245	2566
Switzerland	150	200	250	250	250*	
Total area in EU	***13658**	***23216**	***39990**	***30179**	****20404**	****14213**
Poland	1296	240	158	36	53	153

Source: * Michael Dr. Karus, nova –Institut für politische und ökologische Innovation, Nachwachsende Rohstoffe, Thielstr. 35, 50354 Hürth Germany

**Mr. Jordi Petchamé Ballabriga, Administrateur, Olives, huile d'olive et plantes textiles, D.G. VI.C.4 - Loi 130 7/126, European Commission, Rue de la Loi 200, B- 1049, Bruxelles, Belgium

RUSSIA, HEMP CULTIVATION IN RUSSIAN FEDERATION IN 1995-1999

Year	Hemp cultivated area in Russia	Summary output of hemp fibre
	Total [ha]	[tonnes]
1995	9170	4300
1996	11490	4030
1997	9490	2980
1998	6260	2190
1999	10230	4140
2000	16980	7070

sent by: A. Surinov, General Director, State Commit. of the Rus. Federat. on Statist., (GOSKOMSTAT of Russia), Dep. of Foreign States Statistics and Intern. Cooper., Moscow, Russia

EUROFLAX – PROFILES

Gordon Scheifele, MSc, College Professor

Northwestern Ontario Research Coordinator, Thunder Bay, Ontario, Canada, 435 S James St., Thunder Bay, Ont. P7E 6S7, 807 475 1373, 807 475 1313 (fax), <gordon.scheifele@omaf.gov.on.ca>

Born and raised on a Mennonite mixed 100 acre dairy farm in St. Jacobs, Ontario, Canada.
Completed Master of Science degree at Penn State Kemptville College/University of Guelph, Ontario Canada
Professional Associate, Lakehead University, University, Pennsylvania, US, in Plant Pathology and Genetics (genetic control of disease).
Did Ph.D. graduate studies at the University of Illinois, Champaign/Urbana, Illinois, US, in Plant Pathology and Genetics (genetic control of disease).
Employed in Private Seed Corn Industry as Pathologist/Breeder, Agronomist, Manager of Product Development for PAG Seeds, US, Cargill Seeds, US, and Ciba Seeds Canada respectively until 1990.
1990-1997: Ridgetown College of Agricultural Technology, Ridgetown, Ont. Canada, as Research Scientist and Instructor. Focused on Corn production research and New/Alternative crop research.
1992-1997: Secretary/Treasurer for Ontario Corn Committee. 1991-1994 Chairperson for Ontario Forage Crop Variety Subcommittee (OFCCVS) and active member to present. At present is member of the OFCCVS.
1997 to present: Northwestern Ontario Research Coordinator for field crops and Soil & Crop Advisor (OMAFRA), Kemptville College/University of Guelph, Thunder Bay, Ontario, Canada. Gordon's research focus is on identification and development of new crops for northern Ontario. June 1, 1999 Professional Associate, Lakehead University, Thunder Bay, Ontario. April 1, 1999 College Professor, University of Guelph, Guelph, Ontario.
License for Industrial Hemp Research: 1995, 1996, 1997, 1998, 1999, 2000, 2001 & 2002 in Southern and Northwestern Ontario.
Mr. Scheifele presented industrial hemp research papers at the 1997 & 1998 Commercial and Industrial Hemp Symposium, Vancouver BC and at the 2000 Industrial Hemp Conference, Chicago, Illinois. In 2000, became a director of the Ontario Hemp Alliance and is presently Chairperson. Presented two research papers by invitation to the 3rd International BIORESOURCE HEMP 2000 Symposium, Wolfsburg, Germany. The proceedings of the BIORESOURCE HEMP 2000 are available exclusively online via www.bioresource-hemp.de at the price of DM 150. September 2000 toured and visited industrial hemp processing and research/breeding sites in Germany and Romania (sponsored by HIA, hemp industry and University of Guelph). Became a Supporting Member of the Hemp Industries Association in September 2000. Associate member of Lustr Co-op (Ontario's Forest Seedling Research Co-operative). Full Plant Breeder Status with the Canadian Seed Growers' Association since 1993. Mr. Scheifele was the Professional Host for the Industrial Hemp and Agro-Fibre Tent at the Canadian Outdoor Farm Show, Woodstock, Ontario in 1998, 1999, 2000 and 2001. He attended and presented 3 scientific research papers on Ontario Industrial Hemp research at the International "Bast Fibrous Plants on the Turn of Second and Third Millennium" held in Shenyang City, China, September 18-22, 2001. While in northeast China he toured and visited the fibre flax production and linen/textile industries in Heilongjiang Province. He has written articles for the AgFiber Technology News newsletter. He participated in chapter 21, "Plant Architecture and Function" featuring industrial hemp for illustration in Explore Life, a biology textbook for first year university non-science majors published by Thomson Learning. In July, 2002, Mr. Scheifele coordinated and hosted an Industrial Hemp tour in southern Ontario for 5 senior Ministry of Agriculture officials, East Cape province, S. Africa. The result of the tour is developing a partnership between East Cape and Ontario industrial hemp specialists to develop the industrial hemp industry in S. Africa. Mr. Scheifele was on the program committee and presented an oral and poster paper at the International Conference: "Production, Processing and Use of Natural Fibres" September 10-11, 2002 in Potsdam, Germany. Scientific publications on field crops and industrial hemp are posted on the following web site www.gov.on.ca/omafra and www.ontariohempalliance.org., www.gov.on.ca/omafra/english/offices/northern/ and search for northern research and then reports.

Prof. Dr. Hiromi Tokura, Professor Emeritus of Nara Women's University. Japan. Current contact: <tokura@free.bluenet.pl>

Hiromi Tokura was born on March 11th, 1939 in Kurume city, Fukuoka prefecture, Japan as a first son of Professor med. Noboru Tokura (bacteriologist), director of Tropical Medical Research Institute, Nagasaki University (national) of School of Medicine and Kiyo Tokura (her father was a rich merchant in selling Japanese traditional brush). Hiromi Tokura studied Veterinary Medicine in Hokkaido University School of Veterinary Medicine, Sapporo. He studied further Physiology (chronobiology) at Hokkaido University, a graduate course of master and doctor course under the guidance of Professor Keizo Honma (1965-1968). He was an assistant of Department of Physiology, Nagoya University of School of Medicine and Primate Research Institute, Kyoto University (1969-1974). He was promoted to an associate professor of Laboratory of Clothing Physiology, Department of Clothing Sciences, Nara Women's University (1974-1983) and promoted to a full professor of Nara Women's University (1983-2002). He studied circadian rhythms of monkeys for 1 year 10 months at Max-Planck-Institut fuer Verhaltensphysiologie, Andechs as a fellow of Alexander von Humboldt Foundation under the guidance

of Professor Dr. Juergen Aschoff (1975-1976, 1978). He retired on March 31st, 2002 from Nara Women's University and has been named as Professor Emeritus by Nara Women's University on April 1st, 2002. Eighteen graduate students have got Ph.D. under his guidance including Japanese, Korean, Chinese and Vietnamese. Two Polish young scientists have studied circadian rhythms in humans under his guidance. He has studied environmental physiology, especially. Chronobiology and Clothing Physiology. He has already been invited as a guest speaker six times by International Conferences such as World Conferences of Chronobiology, International Conferences on Environmental Ergonomics, International Conference of Thermal Physiology, International Conferences of Physiological Anthropology, Sapporo Symposium on Biological Rhythm and shall be invited as a keynote speaker by International Conference on Environmental Ergonomics in Fukuoka in September, 2002. He has organized the Asian Workshop on Clothing and Working Physiology under Warm Environments since 1995, which has already been held 6 times, once every year in Seoul, Bangkok and Hanoi. Asian young scientists are growing steadily by attending the Workshop in these fields.

What he has studied in the past and what he would like to study here in Poland?
His field consists of two. One is clothing physiology and the other is chronobiology. In the clothing physiology, he has made clearer with many Ph.D. students the following topics.

1) Thermophysiological significance of different types of clothing..
2) Seasonal warm and cold acclimatization and the improvements of cold/heat tolerance under the influence of two types of clothing.
3) Effects of different clothing materials on thermoregulatory responses in the cold and warm.
4) Effects of two different kinds of pajamas with hydrophilic and hydrophobic properties on sebaceous gland activity, i.e. squalen, waxester and triglyceride.
5) "Why do people wear in the cold in terms of circadian rhythm?" I explained physiological mechanisms of dressing behavior in the cold in terms of load error between actucal core temperature and its set-point. I observed different dressing behavior under the influence of time of day, two phases of menstrual cycles in the woman, bright/dim light intensity during the daytime, which I explained using this hypothesis.
6) Color preference under the influence of menstrual cycles, body heating, brain cooling and bright/dim light exposure during the daytime.
7) Effects of skin pressure by clothing on sweating rate, salivary secretion, intestinal function, reaction time, physical fatigue, disturbances of duration in the menstrual cycles in women and suppression of melatonin and noradrenaline secretion.
8) Protective clothing against agricultural chemicals.
9) Circadian locomotor activity in the two species of monkey under the influences of light and ambient temperature, which were performed with Professor Dr. Juergen Aschoff at Max-Planck Institut fuer Verhaltensphysiologie in West Germany.
10) .Effects of bright/dim light intensity on circadian rhythm of core body temperature and sweating physiology
11) Effects of bright/dim light intensity during the daytime on nocturnal melatonin secretion, salivary IgA, salivary secretion, dressing behavior in the cold.
12) Effects of bright/dim light during the forenoon/daytime on endurance performance, reaction time, which has been discuused in relation to melatonin secretion.
13) A comoparison of circadian rhythms of core body temperature among the Polish, Vietnamese and Japanese. Circadian amplitudes of tropical people was significantly higher . compared with those in the Polish and Japanese. I discussed these findings from the ecophysiological viewpoint..
14) Warm acclimatization mechanisms in the Vietnamese.
15) Effects of ambient temperature cycles on circadian rhythm of core body temperature. The study disclosed not only light-dark cycles, but also, temperature cycles are highly relevant with human circadian rhythm of core body temperature.
16) Effects of electromagnetic fiels emitted by cellular phone and electrical bedding on tympanic temperaturem melatonin secretion, heart rate and blood pressure. The study has been collaborated with Dr. Alicja Bortkiewicz, which disclosed that tympanic temperature reflecting brain temperature increased significantly, melatonin secretion was suppressed, heart rate and blood pressure increased under the influence of electromagnetic fields emiited from cellular phone. Electromagnetic field emitted from electrobedding could suppress salivary IgA and nocturnal fall of core body temperature.
17) Effects of bright/dim light intensity during the daytime on gastrointestinal activity to evening meals.. The study made clear that bright light exposure could accelerate gastrointestinal activity more greatly to evening meals intake.

These studies have been published in many international journals like Naturwissenschaften, European Journal of Applied Physiology, Chronobiology International, Journal of Physiological Anthropology, Journal of Thermal Biology, Biological Rhythm Research and so on (see a list of publications).

He would like to study here two kinds of investigations. Firstly, the effects of bright/dim light intensity during the daytime on circadian rhythmicity of leukocytes in humans. Recently, Abo and his colleagues (1997) (*Clin Exp Immunol, 110: 500-508, 1997)* disclosed that leukocytes are controlled by autonomic nervous system, i.e., granulocyte by sympathetic nervous system, while lymphocyte by parasympathetic nervous system. I have disclosed that bright light during the daytime could induce more excitement of parasympathetic nervous system, being evidenced by higher secetion of saliva, higher increase of

extremities skin temperatures, lowering of heart rate and noradrenaline. Therefore, I suppose that exposure to bright light during the daytime could alter the ratio of granulocyte and lymphocyte in the circulating blood. The probable findings may suggest how to use bright light exposure for the patients suffering from different kinds of disease such as ulcerous colitis, chronic joint rheumatism, hypertension and so on. In this experiment, I am planning to measure heart rate variability with Dr. Alicja Borkiewicz under the influence of bright/dim light intensity during the daytime. This findings shall confirm directly an involvement of autonomic nervous system. Secondly, I would like to measure waxester, squalene and triglyceride under the influence of different kinds of clothing materials, which originate from sebaceous gland. This finding surely suggest how differently the different kinds of clothing materials have influence on skin metabolism, and what kinds of clothing materials should be worn in terms of health maintenance for workers. I would like to compare physiological significance between two kinds of undershirts with hydrophilic and hydrophobic properties for skin metabolism. This finding is probably related with elucidation of physiological mechanisms for occurrence of atopy.

ANNOUNCEMENTS AND PRESENTATION OF INSTITUTIONS INVOLVED IN RESEARCH AND PROCESSING OF FLAX, HEMP AND OTHER BAST PLANTS

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Dear Sirs,

I would like to introduce our company to you. ZAMATEX is an entirely private, Polish textile company present in market since 1992. Our main shareholders are Stanislaw Zareba (chairman), Elwira Zareba and Marta Zareba. We are the members of Cotton Chamber in Gdynia. Almost 13000 square meters of our own manufacturing complex allow us to maintain an annual amounting up to 2500 tons of yarn and to employ over 100 people. The annual sales revenue is 3 millions USD.

We produce open-end yarns made of cotton, viscose and blended yarns from 20 to 120 tex (cotton/flax and cotton/hemp, and probably as first company in the world we produce these blended yarns with lycra). Also we can do doubled yarn. We are the only company in Poland, which produces yarns with hemp. We have also products made of them: woven fabrics, knitted fabrics, furniture covering textiles, terry fabrics, towels, bathing wraps and socks. We have also the whole group of new generation furniture covering textiles and decorative textiles for curtains, awnings with polyester warp.

ZAMATEX took part in two KBN (Committee for Scientific Research) projects simultaneously, which were completed successfully. The first project concerned introducing hemp fibers into textile industry, thus making the garments manufactured easier on the environment as well as on the wearers' health. The second one dealt with introducing doubled yarns – cotton/flax/lycra and cotton/ hemp/lycra.

Recently we have received the certificate Oeko-Tex No. 39 743/IIMW. We are the only spinning mill in Poland and probably in Europe that has such certificate. It means that our products are ecological and safe for environment, because during the treating of hemp and flax fibres we do not use chemistry and the whole process is mechanical. During analysis process there were imposed very hard criterions. The tests proved that textiles made of our yarn ensure safety and comfort, also in contact with child skin.

In November 2001 we have received the title "Leader of Entrepreneurship in 2001" in Poland. We are very proud of this honorable mention but it stimulates us to even better work.

If you would like to receive more information about ZAMATEX, please don't hesitate to contact us. Our technical and commercial departments will attend all your suggestions in a very short time.

Thanks in advance for your kind interest.

We invite you to cooperation!

Mr. Stanislaw Zareba, President of Zamatex, Contact Person in Trade Department: Ewa Hajkowska,

Future plans

Event held in 2002

1. Flax workshop of the FAO European Cooperative Research Network on Flax and Other Bast Plants connected with the 60th anniversary of AGRITEC Ltd. company (1942-2002).
   „Mapping of European germplasm for International Flax Data Base creation, use in breeding for different flax and linseed varieties", September 17-20, 2002, Sumperk, the Czech Republic.
2. The Scientific Session of the COST Action 847: Textile Quality and Biotechnology, devoted to the enzymatic treatment of fibres and products, May 16, 2002, Barcelona, Spain.
3. Co-organisation of the International Conference "Production, Processing and Utilisation of Natural Fibres" on September 10 and 11, 2002 in Potsdam, Germany. Event organised by Institut Agrartechnik Bornim (ATB).
4. Co-operation with other European projects: Co-organisation of the 2nd Annual Workshop of program COST Action 847: Textile Quality and Biotechnology, Italy, Como, October 9-11, 2002.

2003

1. Flax workshop connected with the 50th anniversary of Experimental Farm of the Institute of Natural Fibres in Sielec Stary (1953-2003) entitled: *"Evaluation of economical and agricultural value of fibre and oil flax cultivars grown in Europe",* Poznan/Sielec Stary, Poland, June, 6-7, 2003
2. Workshop of the WG/1 – Breeding, Cultivation and Plant Genetic Resources Working Group, as well as WG/6 – Biology and Biotechnology, June 2003, "New Approaches and Techniques in Breeding, Cultivation and Biotechnology of Bast Plants", Bosnia and Herzegovina.
3. International Conference "Flax and Allied Bast Fibre Plants for Human Welfare". National Research Centre (NRC), to be held on 1 – 4 December 2003 in Cairo, Egypt.
4. Co-organisation of the periodical conference: 6th All-Russia Fair-Exhibition-Conference "Russian Flax 2003", Vologda, or other Siberian city, Russia, March.

2004

1. ***The 3rd Global Workshop of the Network***. Slovak Republic, Germany, UK, Latvia and Lithuania offered to hold the Global Workshop, June 2004. It has to be decided in due course.

REMINDER

Subscription orders and contributions for the next EUROFLAX Newsletter can be sent directly to the Editor by letter, fax or E-mail.

Attention

It is possible to order a translation of selected parts (contributions) of each EUROFLAX Newsletter's issue in French, Polish or Russian for which a charge is made. Send orders to the Coordination Centre of the Network in Poznan.

Prof. Dr. Ryszard Kozlowski (Newsletter Editor)
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