Institute of Natural Fibres

Coordination Centre
of the FAO/ESCORENA
European Cooperative Research Network on Flax and other Bast Plants

Euroflax
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Flax and other Bast Plants

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INTRODUCTION

Dear Readers,

Let me bring your attention once again to the important initiative of the Commodities and Trade Division of the Food and Agriculture Organization of the United Nations in Rome, Italy. As I mentioned in the EUROFLAX No 23 and 24 Mr Brian Moir, the Secretary of the Intergovernmental Group on Hard Fibres and the Intergovernmental Group on Jute, Kenaf and Allied Fibres, informed that in 2005, the FAO Conference called for 2009 to be declared the International Year of Natural Fibres (IYNF). The goal of the IYNF is to raise awareness of natural fibres, to promote efficiency and sustainability of the natural fibres, and to foster an effective international partnership among the various natural fibres industries.

Previous similar projects were organized by FAO in 2004 - the International Year of Rice. I do appeal to all of you, the network members once again to get involved in this challenging event for the greater future of natural fibres. Please, read more about this initiative on page … Moreover we plan to appeal to the renowned fashion designers, drawing their attention to natural fibres as an excellent source of fashionable and comfortable fabrics.

Let me also describe for you the future events with the Network involvement, namely the 3rd Symposium on Natural Fibres, Full Use of Fibres and Textile Applications (FIBRATEX 2006) to be held on November 28th to December 1st 2006 in Havana, Cuba in co-operation with Cuban Universities and institutes. On December 8-9, 2006 the Conference on Natural Fibres: Vision 2020 will be held, co-organised by North India Section of Textile Institute (NISTI), New Delhi, India. Please, note that CONFÉDÉRATION EUROPÉENNE DU LIN ET DU CHANVRE (European Confederation for Flax and Hemp) is going to hold Symposium on technical uses of flax and hemp*, in Prague, Czech Republic in October 2006 (see details on page..). Finally in the year 2007 in October we plan to organize the next world conference (Global Workshop) of our Network entitled: "Innovative technologies for comfort" at the University of Arad, Romania with a help of Romanian Universities, institutes and textile organisations. Additionally our future plans involve an important conference to be held in Canada in 2008, namely: on* July 21 to 23, 2008 *Pan American Conference on Flax and other Bast Plants will be held in Saskatoon, organized by the Saskatchewan Flax Development Commission (SaskFlax) and FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants. Topics connected with agronomy, harvesting, processing, end uses (including plastic composites, insulation, textiles, filtration, geotextiles, fuel), grading and standards etc.*
The details about the above mentioned events could be found e.g. on the last page of this bulletin. Your contributions are highly appreciated.

All your views will be considered. Thank you in advance.

Yours sincerely,

The Editor, Prof. Dr. Ryszard Kozlowski

STRUCTURE OF THE NETWORK

The European Cooperative Research Network on Flax and other Bast Plants is one of the eleven active networks working within ESCORENA (European System of Cooperative Research Networks in Agriculture). The contact person for ESCORENA in FAO is Ms. Jutta Krause, Regional Representative for Europe, FAO Regional Office for Europe (REU), Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy. General information on ESCORENA, the network coordinators, and publications of network results in the REU Technical Series is available on the website of REU
http://www.fao.org/world/regional/reu/Content/Escorena/index_en.htm

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At present, the whole Network brings together 357 experts from 52 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, Croatia, 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, Serbia and Montenegro, Romania, Russia, Slovak Republic, Spain, South Africa, Sweden, Switzerland, Thailand, Turkey, UK, Ukraine, and the USA.

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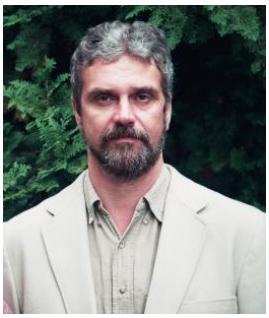
Mr. Alvin Ulrich, Saskatchewan Flax Development Commission, 161 Jessop Avenue, Saskatoon, SK, Canada S7N 1Y3, tel.: 1.306.668.0130, fax: 1.306.668.0131, e-mail : aulrich@biolin.sk.ca. Please note that it is officially accepted that Mr. Ulrich would act as flax representative from Canada in the FAO/ESCORENA Network on Flax and other Bast Plants. He has also the support from the Saskatchewan Flax Development Commission.

NETWORK WORKING GROUPS (WG):



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The reports of the developments of the quality activities within European program: the COST Action 847: TEXTILE QUALITY AND BIO-TECHNOLOGY, coordinated by Prof. S. Sharma were described in some previous issues (WG News).

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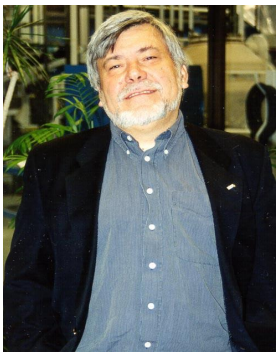

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WORKING GROUP NEWS

Please note!

A more detailed description regarding the activities of the WG1/, WG/2 and WG/4 was given in issue 22. Other Working Groups' reports were included in all previous editions of this bulletin and can be provided on request by the Network Coordinator.

Activities of the Network are aimed at solving the following problems:

- Development and cultivation of bast fibrous plants is a specific niche production, which can provide with comfort for human body due to eco-friendly properties of natural fibres.
- Reduction in the deficit of lignocellulosic fibrous raw material in Europe.
- Contribution to the reduction in over-production of food in Europe.
- Utilization of by-products such as linseed for the production of agro-fine-chemicals applied to healthy food and nutrition.
- Reclamation of industrial areas polluted with heavy metals by the cultivation of heavy metal-absorbing bast fibrous plants (non-food crops)
- Contribution to sustainable development of rural areas of Europe and other regions.

FLAX, HEMP AND ALLIED FIBRES IN THE WORLD

Challenges of sustainable kenaf production for forage and industrial fibres in Malaysia

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Introduction

The recent rapid growth of the tropical timber industry has led to an increasing rate of depletion of the Malaysia's forest resources. To conserve as well as to sustain forest development future generation, harvesting of permanent tropical forests has been reduced considerably. This undertaking coupled with international ban on importation of timber products made from non sustainable tropical forests into developed countries has left Malaysia with little option but to explore alternative sources of raw materials for the timber-based industries.

The use of oil palm trunks and biomass, coconut trunks and kenaf for various products have been ventured into and the results obtained have shown good prospects to replace forest species as solid wood and fibre. Kenaf and roselle are well adapted for production in the wet tropics. Both are closely related species and have similar cultural requirement. They grow best under tropical and sub-tropical condition where mean daily temperatures are greater than 20^0C. They are not particularly demanding in their soil requirement and could be grown on a range of soils under dryland or irrigated conditions.

In the nineties, there has been a growing world interest in kenaf cultivation as a viable substitute for timber-based products. Kenaf has been accepted as the most promising of the bast fibre crops for production of pulp and paper. Many studies in USA and Europe have documented positively the multiple uses of kenaf ranging as a high protein animal feed, pulp and paper, medium density board, particle board to high tech biocomposites. The keen interest of the world on kenaf and its many possible uses has led to the Malaysian Government to initiate a National Kenaf Research Project on the potential of kenaf production as forage and a fibre crop in the country.

The key objective of this national project is to evaluate the feasibility of kenaf cultivation in Malaysia with a view towards utilizing kenaf as an animal feed as well as a crop with multifarious possibilities of commercially exploitable derived products like pulp and paper, fibre, particleboard, and biocomposites.

Sustainable Production Challenges

The challenge is the economic viability and competitiveness of kenaf production in Malaysia compared with those of neighbouring countries in Southeast Asia. Malaysia is endowed with favourable environmental condition for year round kenaf production. So there is no necessity to build large storage barns to house kenaf biomass for a variety of uses. Also, Malaysia has the technological advantage over its competitors with respect to plantation production and processing. Through extensive R & D, the country has become the centre of excellence for good plantation practices as well as processing and downstream technology, particularly with rubber and oil palm. Hopefully, the successes achieved by these plantation sectors can be translated into the Government's vision of making kenaf another successful industrial crop. Nevertheless, the sustainability of continuous cropping of kenaf from a given land remains to be seen.

Germplasm strategy

Kenaf is an annual and its potential yield is largely determined by the flowering date. For maximum production in a particular location, varieties should be selected which start to flower at about the time when the rain stops or soil water is depleted. Vegetative growth stops soon after the commencement of flowering and this is the optimum time for harvesting. However, kenaf is a short-day plant, and flowers readily when day length is less than 12.5 hours. Malaysia being close the equator has a day length of less than 12 hours. To achieve economically viable yield, late flowering varieties or cultivars would definitely be a distinct advantage.

Unfortunately the collection from the Australian Tropical Crops Genetic Resource Centre, QDPI Research Station, and Biloela, Queensland has many early flowering accessions.
Dry matter yields of stalks ranged from 2.3 tones/ha at 42 days after planting to a maximum of 9.6 tones /ha at 140 days after planting. Stalk dry matter yield at maturity ranged from 2.25ton/ha for early flowering kenaf accessions to a maximum of 16.21 tonnes/ha in late flowering accessions. Its nutritive value of kenaf foliage has been described as comparable to that of alfalfa with high crude protein percentage and calcium contents.

Forage selection

Of all the 100 germplasm accessions evaluated, twelve promising accessions were selected for further assessment as forage crops under two cutting intervals, namely 6-weekly cutting frequencies. The results of the assessment are illustrated in Table 1.

Table 1: Dry matter yield (kg/ha) of selected kenaf accessions defoliated at 6-weekly cutting frequencies.

Kenaf Accessions	6-week cut		Cum. D DM
	Har. 1	Har.2	
Khon Kaen 60	2.3	1.9	4.2
Guatemala 51	1.4	2.8	4.2
Cuba 108	2.1	1.7	3.8
Tainung–1	3.2	2.9	6.1
Tainung 2	1.8	1.8	3.6
HC 15	1.4	2.1	3.5
Everglades 71	4.3	1.1	5.4
HC 178-5	1.7	1.1	3.6
Everglades 41	1.2	1.5	2.7
K465/100	5.8	2.0	7.8
K465	5.1	1.8	6.9
K465/118	5.1	1.7	6.8
V12	5.1	2.1	7.2
Thai Kenaf	5.1	4.8	9.9

Being annual in growth habit, the selected kenaf accessions were generally not adapted to ratooning as reflected in the decreased yield in the second harvest except for the Thai kenaf (Figure 4). The best yielding accessions were Thai kenaf giving cumulative dry matter forage yield of 9.9 tonnes/ha followed by K145/100 and V12 and Tainung 1 with over 7tonnes/ha.

Fibre selection

Since the implementation of the kenaf project, over 100 kenaf germplasm accessions had been introduced. On the basis of crude fibre extraction, selected accessions were selected for further evaluation on fibre yield production. The results of the bark and core yield of some selected germplasm accessions are illustrated in Table 3.

Table 3: Estimated crude bast and core fibre yields (tonnes/ha) of selected kenaf accessions based on a planting density of 350,000 plants/ha.

Kenaf accessions	DM Yield (ton/ha)		
	Bast bark	Core	Total stalk
HC 2032	6.87	12.32	19.19
Tainung –1	3.10	12.48	15.58
Guatemala 51	2.86	11.93	14.79
G44	6.98	16.17	23.15
HC 3258 X 32356	3.10	16.6	19.6
HC 7579	4.13	11.45	15.58
HC 117	4.79	20.79	25.58
HC78	4.95	13.26	18.21
HC 15	2.96	16.8	19.76
SF 459	3.83	10.71	14.54
Everglades 41	2.90	12.86	15.76
Tainung –2 (USA)	2.78	10.97	13.75
Tainung –2 (Local)	3.22	11.96	15.18
Khon Kaen 60	3.25	15.75	19.00
HC 583	4.93	17.31	22.24
Myanmar	2.84	11.98	14.82
Mean	3.76	13.96	17.72

Mean bast fibre yield of the selected accessions on dry matter basis was 3.76 tonnes/ha and core yield 13.96 ton/ha. Mean total dry matter yield of kenaf stalk was 17.72 ton/ha. Published biomass (dry matter) production ranged from 8 ton/ha for early varieties to 20 ton/ha for the late varieties. Our preliminary results of fibre yield of the selected kenaf accessions are very encouraging. The bast bark yield of V36 increased from 3.7 to 4.9 kg/ha when the harvest was prolonged from 90 to 150 days. There was also an increase in core fibre yield from 14.5 to 22.6 tonnes/ha. Similar trend was shown in Khon Kaen 60 in both bast and core yields. Comparing the two varieties, V36 seemed to have higher fibre yield compared to Khon Kaen 60.

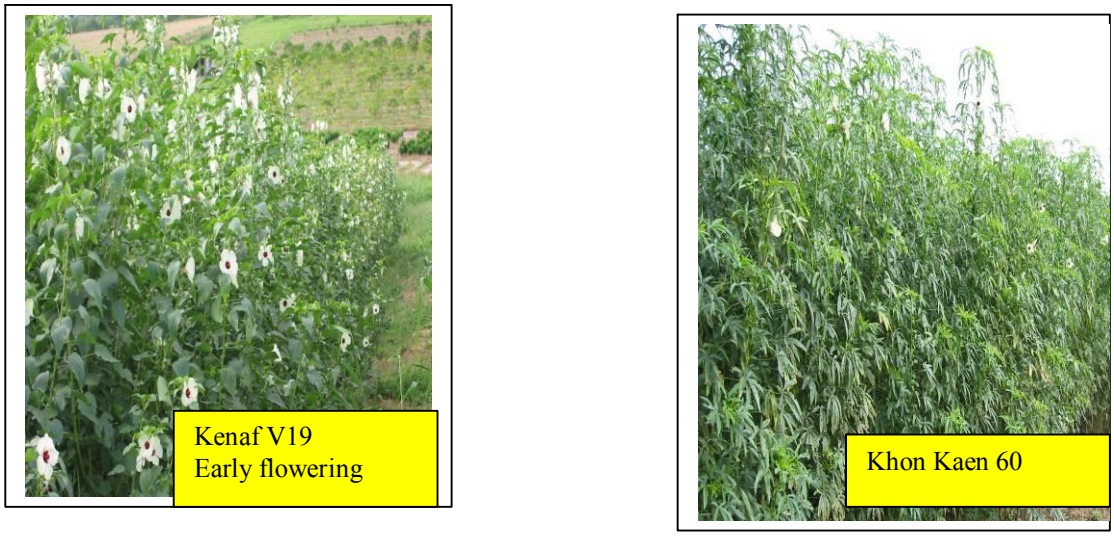

Figure 1. Flowering behaviour of some kenaf accessions

In the year 2003, two photoperiod insensitive kenaf varieties were introduced and evaluated at Serdang, MARDI Research Station. Besides, kenaf germplasm seed multiplication and large scale seed production studies on varieties -Khon Kaen 60, kenaf V12 and kenaf V36 were undertaken to increase kenaf seed stock in view of the increased interest shown by potential investors or entrepreneurs.

Figure 2. Selected Kenaf (V36) for fibre production in northern Peninsular Malaysia

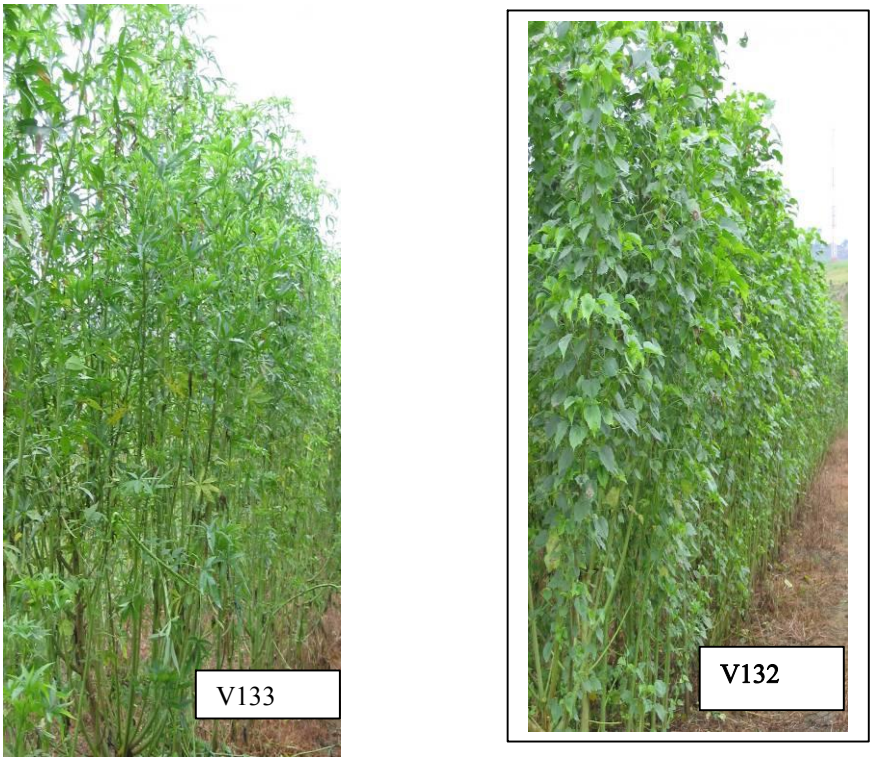

Figure 3: Photoperiod insensitive kenaf varieties, V132 and V133 under field assessment at Serdang, MARDI Research Station.

Figure 4: Thai kenaf -Variety "Keaw yai" suitable for forage production

Pest and diseases

The high humidity and rainfall during the growing season had resulted in many kenaf accessions being susceptible to Phythothora and Fusarium wilt. Leaf hopper infestation also became a major problem in accessions with entire leaves. It is suggested that further work on selection of disease and pest tolerant as well as photoperiodic insensitive kenaf accessions/cultivars be evaluated intensively as a forage crop. The year 2003 witnessed little pest and disease problems in kenaf cultivation except in some areas where a major outbreak of larvae of *Anomis flava* resulted in severe defoliation of a seed crop (See Figure 5).

Pest and diseases management studies are being monitored at MARDI Station in Bertam. To date no new pests and diseases have been encountered. The Black Flea Beetle (*Podagrica gamella*) appeared to be a problem at Serdang. This occurred at planting and after ratooning particularly in the wet season.

Figure 5. Severe damage of kenaf crop (Kenaf V36) by a leaf Defoliator, larvae of *Anomis flava*

Conclusion

Procuring kenaf germplasm representing exotic and hybrid varieties or cultivars continues to be pursued in the hope of selecting superior germplasm material for commercial cultivation in Malaysia.

The next phase is to determine the technical and economic viability of the whole chain of kenaf production from field to factory. This second phase is to promote the production of kenaf into the Malaysian plantation agriculture as an environmentally friendly crop with multiple industrial uses. To achieve this objective the following key strategies need to be implanted. They are:

- Search for develop high yielding and late flowering varieties/cultivars
- Improving agronomic practices for cultivation of selected kenaf to achieve the projected commercial yield of 20 t/ha/crop through efficient mechanization.
- Selecting kenaf varieties with high seed production
- Fast maturing kenaf for ease of harvesting to overcome constraint in high moisture content of stalks.??

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Proposed International Year of Natural Fibres (IYNF) 2009

(see web site: **http://www.fao.org/es/esc/en/20953/21005/highlight_108451en.html**)

To raise awareness of natural fibres, to promote efficiency and sustainability of the natural fibres, and to foster an effective international partnership among the various natural fibres industries

What are Natural Fibres?

Natural fibres are produced from animals or plants. Animal fibres are largely those which cover mammals such as sheep, goats and rabbits, but include also the cocoon of the silk-worm. Vegetable fibres are derived from the stem, leaf or seed of various plants. Close to 30 million tonnes of natural fibres are produced annually in the world, of which cotton is dominant with 20 million tonnes, wool and jute each around 2 to 3 million tonnes followed by a number of others.

What are Natural Fibres used for?

Natural fibres are an important component of clothing, upholstery and other textiles for consumers, and many of them also have industrial uses in packaging, papermaking and in composite materials with many uses, including automobiles.

Why are Natural Fibres important?

Apart from their importance to the consumer and in their various industrial uses, natural fibres are an important source of income for the farmers who produce them. In some cases they are produced on large farms in developed countries, but in many developing and least developed countries proceeds from the sale and export of natural fibres contribute significantly to the income and food security of poor farmers and workers in fibre industries. For some developing countries natural fibres are of major economic importance, for example, cotton in some west African countries, jute in Bangladesh and sisal in Tanzania. In other cases these fibres are of less significance at the national level but are of major local importance, as in the case of jute in West Bengal (India) and sisal in north-east Brazil.

Why an International Year of Natural Fibres?

Since the 1960s, the use of synthetic fibres has increased, and natural fibres have lost a lot of their market share. The main objective of the International Year of Natural Fibres is to raise the profile of these fibres, to emphasise their value to consumers while helping to sustain the incomes of the farmers. Promoting measures to improve the efficiency and sustainability of production is also an important aspect of the Year.

Who decided that 2009 would be the International Year of Natural Fibres?

The idea came from a meeting of fibre producing and consuming countries in FAO, the Food and Agriculture Organisation of the United Nations. At the request of FAO, the actual declaration is made by the General Assembly of the United Nations.

Who will organise the International Year?

There is a coordinating unit in FAO, but a great many other organisations and people will be involved. An International Steering Committee, with representatives from various fibre organisations, consumer bodies, and funding agencies, will meet from time-to-time to guide the programme. Most of the activities will be organised by partner organisations, some at the international level, and many more within individual countries.

What will happen in 2009?

The actual programme of events will take shape as 2009 approaches. One or more large international conferences will be held. There will be displays and fashion shows`and many other events in many countries, run by a variety of different national organisations.

Where will the money come from?

To some extent, the International Year of Natural Fibres will be funded by the fibre industries which will benefit from it.

Donor funding will help FAO with its coordinating activities, particularly to support those parts of the programme which are directed at or conducted in the least developed countries.

OUTLINE OF PROPOSED CALENDAR OF EVENTS

2006
International Steering Committee (ISC) to
1. Define objectives;
2. Further develop its own membership and a broad set of partners;
3. Develop the concept, nature of activities, role of various partners.
Establish contact with organizations in each country, encourage formation of National Committees to plan and implement activities in each country.
Partners, international and national, encouraged to develop their own objectives, likely activities, funding needs and sources.
Identify funding - seek donors.
Continue work with member nation sponsors in UNGA, draft UN resolution.
Outline communications plan for media contact, publicity materials, initial communication materials such as leaflets and web site.
FAO planning activities, recruiting a project coordinator, etc., in preparation for more intensive planning next year.

September 2006:
UNGA resolution to declare 2009 the International Year of Natural Fibres.

2007 and 2008
Detailed planning of events for 2009 - much in the hands of partners.
Publication of FAO Commodity Study The Global Natural Fibres Economy - possibly to be launched at an international conference on natural fibres
FAO as lead unit to develop/prepare: logo, posters, fact sheets, brochures; calendar of events; all on a web site. Media releases.
FAO regional events. IYNF to be publicized at all possible events.
Develop a plan for sustainability of progress beyond the IYNF.

November 2008
Grand opening of the International Year of Natural Fibres.

2009
International Year of Natural Fibres.
Activities by partner organizations around the world could include: conferences/meetings; demonstrations/fairs/shows - a Natural Fibres Expo?; Fashion events, art/photographic competitions/exhibitions, events aimed at school children, essay competitions.
FAO as lead technical unit coordinating calendar of events, media coverage.
Also FAO Conference on Natural Fibres in Rome; regional FAO events?.

2010
Wrapping up activities, reporting (measuring impact?)

Future
Ongoing activities of the international natural fibres alliance.

See links on the right to some IYNF partners.

International Year of Natural Fibres Coordinating Unit
FAO, ESC Division , Viale delle Terme di Caracalla, 00100 Rome ITALY, Fax: +39 06 57054495, E-mail: IYNF-2009@fao.org

Note: you are welcome to present your intimations, ideas and proposals on how to contribute to the celebration of the International Year of Natural Fibres 2009

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

Next Conferences Proposals

Proposal of event with the Network involvement

2006

- November 28th to December 1st 2006. *III Symposium on Natural Fibres, Full Use of Fibres and Textile Applications (FIBRATEX 2006),* **as a part of 13th SCIENTIFIC CONVENTION ON ENGINEERING AND ARCHITECTURE (CCIA 2006),** CUJAE, Cuba, Havana**,** November 28th to December 1st 2006. Organizer of **FIBRATEX 2006**: El Instituto Superior Politécnico "José Antonio Echeverría" (CUJAE). Contact person: Ms. Martha Mazorra Mestre, Jefa Grupo de Tensioactivos y Emulsiones, Universidad Técnica de Energía Renovable (UTER), CUJAE. Cuba, Havana, tel.: 537-266 3633, e-mail : marta@ceter.cujae.edu.cu, conrado@ceter.cujae.edu.cu http://www.cujae.edu.cu/eventos/fibratex/#

- December 8-9, 2006. *Conference on Natural Fibres: Vision 2020* organised by North India Section of Textile Institute (NISTI), New Delhi, India. Contact person: Prof. R. Chattopadhyay, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, tel.: +91-11-26591412 (O), +91-11-26581977 (R), fax: -91- 11-2658-1103, e-mail: rchat@textile.iitd.ac.in and Prof. V. K. Kothari, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, tel.: +91-11-26591401 (O), +91-11-26591937(R), fax: 91- 11-2658-1103, e-mail: kothari@textile.iitd.ac.in

2007

- October 7-9, 2007. 4th GLOBAL WORKSHOP (GENERAL CONSULTATION) OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS: "Innovative technologies for comfort" University of Arad, Romania, Contact person: Dr Cecilia Sirghie, E-mail: cecilias1369@yahoo.com

- April 9 – 11, 2007. 4th International Conference of Textile Research Division, NRC, Cairo, Egypt: Textile Processing: State of Art & Future Developments. Contact: Dr. Hosam El-Sayed, conference Coordinator, Research Centre, Tahrir Str., 12311 Dokki Cairo, Egypt, fax: +20 (0) 2 33 70 931, Mob.: +20 (0) 10 544 36 51, E-mail: conf@trd-egypt.org
- May 8-10, 2007. International conference on Biotechnology Engineering (ICBioE"07), organised by International Islamic University Malaysia, P.O. Box 10, 50728 Kuala Lumpur, Malaysia, tel.: +603 6196 4440/4577, fax: +603 6196 4442, e-mail: icbioe@iiu.edu.my, website: http://www.iiu.edu.my/icbioe/

2008

- July 21 to 23, 2008. Pan American Conference on Flax and other Bast Plants 2008, Saskatoon. Organized by the Saskatchewan Flax Development Commission (SaskFlax), FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants. Topics connected with agronomy, harvesting, processing, end uses (including plastic composites, insulation, textiles, filtration, geotextiles, fuel), grading and standards. Canadian Conference Coordinator Ms. Penny Eaton, e-mail: penny@eatonassociates.ca. Contacts: Ms. Linda Braun, Executive Director, Saskatchewan Flax Development Commission (SaskFlax), A5A - 116 - 103rd Street East, Saskatoon, Saskatchewan, Canada S7N 1Y7 Telephone: (306) 664-1901; Fax: (306) 664-4404 or email saskflax@saskflax.com and Mr. Alvin Ulrich, Crop Fibers Canada, 161 Jessop Avenue, Saskatoon, Saskatchewan, Canada S7N 1Y3, Telephone: (306) 955-4506, Fax: (306) 668-0131 or email: ulricha@cropfiberscanada.ca

Conference on Natural Fibres: Vision 2020, New Delhi, India, December 8-9, 2006.

The Textile Institute

Northern India Section Conference Announcement

CONFERENCE ON NATURAL FIBRES: VISION 2020
8-9th December 2006
New Delhi, India

Organized by
North India Section of Textile Institute (NISTI), India

in collaboration with
Institute of Natural Fibres, Coordination Centre FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants, Poland

Light weight, strong and low-cost natural fibers have been for centuries made into clothing as well as a number of other products like baskets, sacks, ropes, and rugs. Over the years a large number of natural fibres such as cotton, wool, silk, linen, bamboo, sisal, jute, coir and abaca have found usage in a wide variety of applications.

From the first cultivation of flax, cotton and domestication of sheep and goats, humans have manipulated natural fibers, through selective planting and breeding, to better fulfill their needs. These days, technology in fibers goes far beyond merely choosing which goats should breed or what variety of cotton should be planted. Cotton breeding these days includes bioengineering of cottonseed for preferred fiber qualities like staple length and for resistance to drought and pests to improve yield and reduce the need for pesticides. The technological advances associated with fibers and textiles don't stop there, however. A unique combination of properties inherent in natural fibres makes them extremely suitable for many applications. They can be blended with man-made fibres to exploit the positive attributes of both natural and man made fibres and develop products manifesting properties not achievable with one type of fibre. Comfort and function are mixing with style to provide new generation of textile products. New technologies like nanotechnology and bio technology are being used to enhance the properties and performance of natural fibre products. With the growing concern about fitness and wellness, consumers are seeking garments that are rugged, long-lasting, breathable, flexible and stylish. Policy makers, researchers and even consumers are becoming more and more aware of this fact.

Beauty and uniqueness of natural fibres should be exploited and their shortcomings need to be addressed through research and development. Significant amount of work has been done to enhance quality of the natural fibres, their processing and finishing.

The conference offers a platform to all the stake holders to discuss all aspects related to the natural fibres so as to have an understanding of their current state of development and secure their future in the competitive environment in the years to come.

Topics/Areas

Papers are invited highlighting the advances in the following broad areas:

- Status of natural fibres in the world and especially in India
- Product, process development and quality issues
- Traditional and new applications

- Use of natural fibres in technical textiles
- Comfort, handle and care properties of natural fibre products
- Blends of natural fibres
- Performance enhancement of natural fibre products
- R & D in natural fibres
- Finishing of natural fibre textiles
- Use of exotic natural fibres
- Natural fibre biocomposites
- Bioengineering in fibres (designer seeds, transgenic cotton, spider silk, natural fibres and nanotechnology)
- Sustainability in fibres (organic cotton, abaca)

About Organizers

North India Section of the Textile Institute (NISTI)
The Textile Institute
North India Section

NISTI was formed in 1989. It is a subsidiary of the Textile Institute, Manchester, U.K.. The Textile institute is an international association, spanning every sector and occupation relating to fibres and their uses, which together form the world's largest industry. Its mission is to promote professionalism and provide global net work for the long-term development of the industry.

In countries where there is concentration of members, National committee and local sections have been set up to cater for their needs. Each section is run by a committee elected by it and has representatives on the council. Section organizes a number of activities that are of direct interests and relevance to local conditions. Typical program include factory visits, meetings, workshop, conferences, seminars, and social events. Keeping in line with these objectives, NISTI organizes a number of activities around the year to promote professional knowledge and provide networking for growth and development. NISTI is administered by an Executive Committee comprising of eminent professionals drawn from the industry and technical institutes.

Institute of Natural Fibres (INF), Coordination Centre

INF is an interdisciplinary research center with international standing, involved in complex research on obtaining and processing natural raw materials (flax, hemp, silk, wool, etc.). In particular, it carries out research on the cultivation and agricultural technology of fibre crops, genetic engineering, biotechnology, retting and spinning technologies.

INF is conducting research in natural fibres processing for their use in the textile and other industries (transport, building, pulp and paper etc.). By-products from lignocellulosic plant processing are utilized for bio-composites. Chemical transformations of by-products into agrochemicals are applied in pharmacy, nutrients, dietetic food and cosmetics. Institute of Natural Fibres acts as the Coordination Centre FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants (since 1989), as well as the Centre of Excellence on Natural Lignocellulosic Fibrous Raw Materials "CELLUBAST" since 2004.

FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants,

Poland Section of the Textile Institute

Programme Schedule

Announcement / Call for papers: 10th April 2006
Last date of receiving of Abstract of papers: 30th June 2006
Date of announcement of acceptance of papers: 15th August 2006
Date for receiving of text of full Paper: 15th October 2006

Address for correspondence

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Tel: 011- 2658 1412 Fax: 011- 26581103, E mail: rchat@textile.iid.ac.in

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Tel: 011- 2658 1401 Fax: 011- 26581103, E mail : rabisankarc@gmail.com

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i) QUARTER PAGE: I/S Rs. 6,000/- or US$ 150 FOR B/W

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DISPLAY OF ADVERTISEMENTS ON DISPLAY BOARDS OF SIZE 3ft.x 5 ft. Rs. 20,000/- or US$ 500

REGISTRATION CHARGES:

a) FOR INDUSTRY: Rs. 3000/= or US$ 100
b)FOR ACADEMECIANS: Rs. 1500/= or US$ 50
c) FOR STUDENTS: Rs. 500/= or US$ 25

POSSIBILITIES OF COOPERATION WITH OTHER NETWORKS AND ASSOCIATIONS IN TEXTILES AND ON INDUSTRIAL CROPS

1. The Textile Institute, 1st Floor St James's Buildings, 79 Oxford Street, Manchester M1 6FQ, UK, tel.: +44 (0) 161 237 1188, fax: +44 (0) 161 236 1991, e-mail: tiihq@textileinst.org.uk, Web: www.textileinstitute.org. Membership Manager: Stephanie Powell, spowell@textileinst.org.uk
2. CELC/MASTERS OF LINEN, 15, rue du Louvre, 75001 Paris, France, tel.: +33(0)1 42 21 06 83, fax : +33(0)1 42 21 48 22, e-mail : info@mastersoflinen.com http://www.mastersoflinen.com
3. The E-mail Forum: Information Exchange on Natural Fibres, operated by FAO's Commodities and Trade Division, contact person: Brian Moir, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, fax: +39 06 57054495, tel.: +39 06 57054339, e-mail: Brian.Moir@fao.org
   To subscribe to the forum, send an email to mailserv@mailserv.fao.org, leave the subject line blank, with the message: subscribe Fibres-Indy-L. Website: http://www.fao.org/es/esc/
4. INFO*RRM*-IENICA – Industry Network for Renewable Resources and Materials – Interactive European Network for Industrial Crops and their Applications in the new Millennium. Coordinator: Mr. Melvyn F. Askew, Defra, Central Science Laboratory at York, SAND HUTTON, YORK, UK Y041 1LZ, tel. 44-1904-462309; fax: 44-1904-462029, e-mail: m.askew@csl.gov.uk, For more data see http://www.ienica.net/ and www.industrialcrops.eu.com.
5. Flax Council of Canada; The Council is based in Winnipeg, with Mr. M. Barry Hall as President. The previous president Mr. Donald H. Frith 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
6. Saskatchewan Flax Development Commission, A5A-116-103rd Street East, Saskatoon, Saskatchewan, S7N 1Y7, tel.: (306) 664-1901, fax: (306) 664-4404, e-mail: saskflax@saskflax.com, Web site: www.saskflax.com

7. The Fiber Society with Mr. Charles A. Cannon Professor as Secretary, Director Emeritus, Nonwoven 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
8. International Hemp Association, Postbus 75007, 1070AA Amsterdam, The Netherlands. tel/fax: +31 (0)20 618-8758, e-mail: iha@euronet.nl
9. 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. http://www.eiha.org/
10. The Hemp Foods Industry. Contact persons, John Roulac, call (800) 993-4367, Nutiva, P.O. Box 1716, Sebastopol, CA 95473. http://www.nutiva.com/
11. Olds College Centre for Innovation Natural Fibre Centre (OCCI), 4500 -50th Street, Olds, Alberta, Canada T4H 1R6, tel.: (403) 507-5206, fax: (403) 507-7977, e-mail: relvestad@admin.oldscollege.ab.ca, www.occi.ab.ca
12. Agrofibre Network, Finland, contact person: Antti Pasila, University of Helsinki, e-mail: antti.pasila@helsinki.fi
13. GRiCI (Research Group on Industrial Crops) headed by Prof. Dr. Gianpietro Venturi, Full Professor of Agronomy and Crop Science, Department of Agroenvironmental Science and Technologies (DiSTA), University of Bologna – ITALY, tel.: +39 051 2096652, fax: +39 051 209 6241. For more pieces of information see EUROFLAX Newsletter No 23, January 2005.

The whole Truth about Bast Fibers

By: Expert / Advisor B. Sc. Agr-Eng. Anwar M. Allam, Egypt

Abstract.

All bast fibres plants contain NATURALLY fibres, which have POTENTIAL favourable textile characteristics that are wholly and fully apparent ONLY when the fibres are obtained in a PURE form, completely separated from all other plant tissues.

The CONVENTIONAL methods of Bast fibres extraction, namely WATER retting and DEW retting are fully responsible for the CALAMITY and the deterioration of the TEXTILE situation of the produced fibres, because those methods have NOT been able to regularly and constantly obtain PURE fibres. Instead the fibres produced have always been of irregular thickness, strength and suppleness.

A new method of vegetal fibres extraction, using OSMOTIC PRESSURE instead of Bacteria, Moulds and Funguses, has been constantly and permanently able to produce PURE favourable textile fibres, from the different bast fibres plants.

The new method of vegetal fibres extraction is soundly based on scientific NATIRAL well known laws of water DIFFUSION through semi-permeable membranes, and OSMOTIC PRESSURE normally generated on these membranes.

Introduction.

In spite of having always been of inconsistent textile specifications, causing a lot of spinning problems and the scarcity of their high qualities, over and above their ever-increasing costs, flax fibres, lived, for centuries, as a favourite textile raw material, leading all other bast fibres. Flax yarns were irregular, having different thickness, strength and suppleness all along. Linen fabrics texture was, accordingly uneven, rigid and wrinkly, needing frequent ironing. These defects have been admitted unanimously and even considered as being particular natural ornament, copied in other regular fibres, to give the same impression.

Unfortunately, after World War 2, this particular situation of flax fibres changed rapidly, as a result of the change in the human characteristics and their behaviour and tastes, preferring the easier and the less expensive. The demand for the heir Dom linen of our Ancestors decreased rapidly to almost nil, causing the closure of the great majority of flax spinning mills and accordingly a great number of the water retting mills, with the pretence that the water retting of flax straw was polluting the atmosphere. The CALAMITY of flax almost put and end to the very long history of flax and his supremacy as a textile raw material, leading all other bast fibres.???

To survive, Flax fibres have to be common, ordinary, and popular, having regularly consistent textile specifications, easy-to spin without major problems. Their extraction should be stable and not polluting to the environment. In short, they have to be perfectly satisfactory to the spinners and have reasonable competitive prices.

FLAX FIBRES EXTRACTION.

Morphologically, all flax fibres have, NATURALLY, excellent stable favourable textile specifications, in contradiction with the unanimously known fact that the actually produced flax fibres have always been of inconsistent specifications. This paradox has been explained, when a newly discovered method of vegetal fibres extraction, succeeded to obtain the fibres, for the first time, in a PURE form and having exactly the same excellent stable favourable textile specifications. This achievement showed practically that the fibres NATURE has always been wrongly blamed for the defects of the produced fibres and that the blame should have gone to the method used and the inefficiency of the perpetrator. It became POSSIBLE to rescue the hopeless situation of flax fibres, by using the discovered new method.

Inside the flax plant, fibres are in form of long thin filaments, formed by both-ends tapered fibre cells connected together in a way that each one cell is over lapping 50 %of the preceding cell and under laying 50 % of the following cell, so that the such-formed filaments remain of the same thickness, as the centre part of the primary cells. Every ten of these filaments are serving one leaf and connecting it to the root end of the plant, and for this reason they have the same length. The number of these unequally long ten-some filaments equals the number of leaves in the plant. So the number of such filaments in each one straw can be calculated easily, to have an idea about the thin ness of the filaments (their average is about 1800 per one stem).

The different filaments are running longitudinally from the root end to the top end, embedded into a holding tissue, filling the whole space between the central wooden cylinder and the outer skin of the plant. To be available for use they have to be extracted from the other plant tissues.

The wooden cylinder, the fibres and the outer skin are all formed of STATIC cells; the holding tissue is differently formed of DYNAMIC cells. The DYNAMIC cells have semi-permeable membranes; the STATIC cells have normal membranes (not semi-permeable). The specific characteristic of the semi permeable membrane is to allow water molecules in, through them, but they do not allow them out, as long as the percentage of the water molecules inside their cells is inferior to their percentage outside the cells. STATIC cells, when they come in contact with water allow water molecules in and out freely; they are not affected, by water, more than becoming wet until saturation.

The difference between the effect of water on STATIC cells and the effect of water on DYNAMIC cells is exploited to get rid of the DYNAMIC cells, forming the whole holding tissue. The liberation of the fibres, by eliminating the totality of the cells forming the holding tissue is practically very easy to perform, as follows:

Once the dry straw is in water, the water molecules NATURALLY move to wet all the cells forming the straw. The STATIC cells would gradually be wet until saturation. The DYNAMIC cells would allow the water molecules in, through their semi-permeable membranes as long as the concentration of water molecules out side them is higher than their concentration inside the cells. As a result of the continuous entry of the water molecules inside the limited area of each DYNAMIC cell, an increasing OSMOTIC PRESSURE is generated outwardly on their membranes, until this pressure becomes more than the membranes can stand, causing their cracking and letting their contents disperse in the outside water, eliminating the STATIC cells gradually.

In the course of this operation, the entry of the water molecules continue until the time the concentration inside and outside the DYNAMIC cells become equals; then every thing stops, which is what we do not want. To get the operation going continuously until the complete elimination of ALL the DYNAMIC cells, we have to prevent its stoppage by constantly keeping the difference of the concentration inside the DYNAMIC cells and outside them, as high as possible; this is attained by replacing the outside water, every time it is polluted by the contents of the bursting DYNAMIC cells and their dispersion in it.

CONCLUSION.

To extract the PURE fibres, smoothly without affecting their natural POTENTIAL favourable textile characteristics, the new vegetal fibres extraction, using OSMOTIC PRESSURE, is the best method, as it is strongly based on stable scientific NATURAL well-known ever-lasting laws of water DIFFUSION, through semi-permeable membranes and OSMOTIC PRESSURE, generated on these membranes.

The fibres extracted by the OSMOTIC PRESSURE are constantly of high quality, excessively fine, strong and having high suppleness. They are suitable for the spinning of all kind of yarns to the finest possible, without major spinning problems and their cost of production would allow reasonable competitive prices, to the satisfaction of all spinners.

Other bast fibres, extracted by the new OSMOTIC PRESSURE revealed to be of constant favourable textile specifications and much better stable quality, capable of spinning finer counts of regular homogeneous yarns.

News from the Institute of Natural Fibres (INF), Poznan, Poland

The staff of the Institute of Natural Fibres conducts several PhD studies; there are the abstracts of the newest of them:

Completed (Defended) Doctoral thesis: **The effect of flaxseed oil addition to laying hens diet on the fatty acids profile in egg yolk,** Jadwiga Kozlowska, PhD, Institute of Natural Fibres in Poznan
Supervised by: Prof. dr hab. Stanislaw Wezyk, National Research Institute of Animal Production in Balice near Cracow

Abstract

The study was aimed at determining the effect of feeding doses of flaxseed oil, genetic strains of laying hens and housing conditions on the fatty acid profile and cholesterol concentration in egg yolk. The test comprised also the evaluation of qualitative parameters of egg content and shells and production efficiency.

360 laying hens aged 25 weeks were fed feeding mixes containing 0% (control), 3% and 6% of flaxseed oil. The mixes contained an addition of antioxidants (BHT + EQ) in the amount of 250g/ton of fat. The laying hens belonged to two genetic strains: Hy Line Brown and Rosa 1. The hens were kept in two housing systems: cage and on the litter. The study was conducted in 5 terms: after 0, 1, 2, 4, and 8 weeks of feeding the hens experimental feeding mixes.

As a result of feeding the laying hens different diets with 0, 3 and 6% enrichment with flaxseed oil the total content of n-3 PUFA in yolk fat increased respectively by 2.3, 6.8 and 10.2%, the content of alphalinolenic acid (ALA) respectively by 1.5, 5.2 and 8.4%. Just after one week of feeding the hens the diet enriched in 3 and 6% doses of flaxseed oil lower concentration of total cholesterol in yolks was observed, respectively by 5.8 and 5.0%, which was maintained throughout the whole study. The changes in cholesterol in yolks did not depend (the statistical differences were insignificant) either on the genetic strain or the housing system. Feeding hens the diet enriched in flaxseed oil did not result in considerable changes in egg quality, average productivity of hens or the usage of feed per egg.

When compared the two strains capacity of n-3 PUFA transfer from feed to egg yolks it was observed that Hy Line Brown laying hens accumulated significantly more n-3 PUFA than Rosa 1 hens. The significant interaction ($p \leq 0.05$) between genetic strains of hens and flaxseed dose indicates stronger growing trend to accumulate ALA, DPA and DHA fatty acids in the yolks of Hy Line Brown laying eggs than in case of Rosa 1 hens, correlated with the increase of the flaxseed doses in the feed.

Comparison of the housing systems shows that the laying hens kept on the litter accumulated considerably more ALA in yolks than those kept in cages with the upward trend with the higher dose of flaxseed oil. It resulted from the increase of the n-3 PUFA intake per egg in the on the litter system due to large drop in productivity (by 9.4%), increase of feed consumption per hen (by 5.2g) and the increased ratio of feed per egg (by 14.1g/egg).

A different reaction of the two genetic strains to the housing system was observed regarding the productivity and ALA transfer from the feed to the eggs. Hy-Line Brown hens housed on the litter reacted with a significant drop of productivity and higher ALA accumulation in yolks than Rosa 1 hens. In case of Rosa 1 groups ALA accumulation in both housing systems was not considerably different and the drop of productivity in on the litter housing was much smaller.

Biological assessment of antitranspirants on fibre flax cultivation to increase the resistance of plants to drought.

M. Sc. Malgorzata Byczynska

Supervisor: Prof. Krzysztof Heller, Head of Department of Bast Plants Breeding and Agronomy at the Institute of Natural Fibres, Poznan, Poland.

Abstract

Fibre flax (*Linum usitatissimum* L.) is a plant especially susceptible to water deficiency cultivation ground. The main factor that limits the yields of fibre flax in Poland is shortage of water in the soil.

The objective of the research is biological assessment of antitranspirants effect on fibre flax cultivation in order to increase the resistance of the plants to water deficiency in breeding ground
The baseline of the research was the pot experiments conducted in 2002 –2005 in vegetation hall of Experimental Station of the Institute of Natural Fibers in Petkowo (Wielkopolskie district, Poland). In the condition of controlled drought stress (25 % of full field water capacity FWC) the usefulness of antitranspirants in flax cultivation was evaluated. Antitranspirants have coating, desiccant and specific properties and can act as a fertilizer, a growth regulator and a biopreparation.

The best results so far in increasing the fibre flax resistance to drought stress have been obtained by the applying preparations with the specific activity (developed at INF), desiccant activity and acting as a growth regulator.

The study has been continued in years 2005 – 2006 in field experiments conducted at two Experimental Farms of the Institute of Natural Fibers in Bialobrzezie and Stary Sielec. The experiments are carried out on two types of soil of different full field water capacity and of different climatic conditions.

Tests on evaluation of drought stress resistance of selected cultivars of flax (from INF collection) are an important element of the whole study.

Objectives of the study:

- To determine the optimal doses and time of antitranspirants application;
- To assess the effect of the tested preparations on plant morphology, yield and fibre quality;
- To develop a method of increasing the fibre flax resistance to drought by applying antitranspirants,
- To study the resistance of different fibre flax varieties from collection INF to water deficiency in the soil and to assess the effect of unfavourable conditions on growth, development and yielding.

The effect of biopreparations and selected substances on inhibition of occurrence and growth of spawn *Fusarium oxysporum* Schlecht. F. sp. *lini* Bolley

M. Sc. Katarzyna Wielgusz

Supervisor: prof. dr hab. Zbigniew Weber, Deacon of Horticulture Department and Head of Phytopathology Department of A. Cieszkowski Agriculture University in Poznan

Abstract

The biggest problem in flax cultivation in Poland is Fusarium wilt, which every year occurs at most plantations and destroys about 1/3 or even ½ of plants.
Long term studies on flax protection against the disease have proved that there are no fungicides that effectively protect flax in all its vegetation stages.
Planned in the study tests will allow for selecting efficient bio-preparations for flax protection against Fusarium wilt. The tests include biological substances based on chitosan and grapefruit extract and also preparations containing as active substances other microorganisms antagonistic against the pathogen (*Pythium oligandrum, Pseudomonas fluorescens*). Their beneficial influence on natural environment is an important factor as their use may limit the use of traditional chemical fungicides.
The experiment was carried out in a 3-year period from 2003 to 2005 on two flax cultivars: a fibre cultivar Alba and oil one Szafir.

The aim of the experiment is evaluating, in field and pot conditions, the effect of selected bio-preparations and biological substances on inhibition of flax Fusarium wilt and obtained yields (seed, straw and fibre).
In laboratory conditions the effect of the substances on reducing the pathogen spawn growth is evaluated.
The seed of oil flax (content of heavy metals and cyanogenic glucozides) were evaluated in terms of quality.
Additionally the effect of other fungi found in the soil of experimental plots, where the bio-preparations and selected seed dressings were applied, on *Fusarium oxysporum* f. sp. *Lini*.

These complex tests will enable to develop a program of biological flax protection against Fusarium wilt, which can be used at ecological and other plantations.

Activation of lignocellulosic composites by oxidizing enzymes

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Abstract

Recently, the research has been carried out on the possibility of using biotic factors for the activation of natural bonding forces present in lignocellulosic materials in order to reduce the use of synthetic bond adhesives.
Among the methods of activation, the enzymatic treatment seems to be particularly promising. The idea of enzymatic bonding of lignocellulosic materials is based on oxidation of phenolic compounds.
Lignocellulosic materials can be bonded by enzymatically activated lignin either contained in a raw material or technical lignins mixed with the raw material, similarly to conventional bonding method.
The study aimed at obtaining lignocellulosic composite boards by enzymatic bonding with elimination of adhesives like urea-formaldehyde.
Conditions of bonding lignocellulosic composites by oxidizing enzymes were determined using wood and annual plants as well as laccase enzyme and its mediators.
The optimal conditions for raw material processing with laccase and parameters of hot pressing of activated raw material into composite boards were determined.
Evaluation of raw material activation and lignocellulosic composite bonding trials were carried out by UV and IR spectroscopy and by measuring the oxygen consumption during raw material activation process and by determining the physico-mechanical properties of moulds and formaldehyde content in them.
Bonding of lignocellulosic composites by oxidizing enzymes has a positive effect on environmental protection.

SOURCES OF INFORMATION

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

a. http://www.fao.org/world/Regional/REU/Content/Escorena/index_en.htm [Website of ESCORENA, FAO – Regional Office for Europe]
b. http://www.inf.poznan.pl [Institute of Natural Fibres, Poznan, Poland]
c. http://www.csl.gov.uk/ienica, http://www.ienica.net [IENICA – Interactive European Network for Industrial Crops and their Applications in the Changing Millennium]

Websites of the Network Chairmen:

- http://www.agritec.cz [Martin Pavelek, AGRITEC, Šumperk, 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:

It has been released a new version of the FAO Fibres Statistical Bulletin. (June 2006). It is available from the FAO website at: http://www.fao.org/es/esc/en/20953/21005/21524/highlight_51023en.html . (Or go to our front page at http://www.fao.org/es/esc, click on "Jute and Hard Fibres" on the left side of the page, then find "Fibres Statistical Data-base and Statistical Bulletins"in the body of the page.)

A new FAO Statistical Bulletin on Jute, Kenaf, Sisal, Abaca, Coir and Allied Fibres has just been released and it is on FAO website at: http://www.fao.org/es/esc/en/20953/21005/21524/highlight_51023en.html
Other links: http://www.texdata.com, http://www.its-publishing.com, www.naturfaser-wirtschaft.de
www.agrofibrecomposites.com - Agrotechnology and Food Innovations website on natural fibre composites

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 Hemp Food Industries Association Contact person: Mr. Paul Beinhaim, e-mail: paul@hemp.co.uk
- http://www.nutiva.com/

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-operation.

The Network's members and the Coordination Centre have cooperated and worked within the following EU projects and European programme:

1. Within *COST– European Co-operation in the Field of Scientific and Technical Research).*
    - COST Action 847: *Textile Quality and Biotechnology* 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 More pieces of information see COST Action 847 news in some previous issues of the bulletin
    - COST Action 628. Life Cycle Assessment of Textile Products, Eco-Efficiency and Definition of Best Available Technology (BAT) of Textile Processing. Chairwomen – Eija Nieminen, Dr. Techn., Director at University of Art. and Design, UIAH DESIGNIUM – The New Centre of Innovation in Design. Hämeentie 135 C, 00560 Helsinki, Finland. Numbers of tel.: ++358 9 756 30424, fax: ++ 358 9 756 30433. e-mail: eija.nieminen@uiah.fi More details about activities of the Cost Action 628 were presented in Euroflax Newsletter No 17.

2. INFO*RRM*-IENICA project. IENICA was the Interactive European Network for Industrial Crops and their Applications in the Changing Millennium. Coordinator: Mr. Melvyn F. Askew, Defra, Central Science Laboratory at York, SAND HUTTON, YORK, UK Y041 1LZ, tel.: 44-1904-462309; fax: 44-1904-462029, e-mail: m.askew@csl.gov.uk

NEWS ABOUT THE EUROPEAN PROJECTS WITH INVOLVEMENT OF NETWORK MEMBERS

Hemp Sys. Design, Development and Up-Scaling of a Sustainable Production System for **Hemp** textiles: an Intergated Quality **SYS**tems Approach. http://www.hempsys.net. Project Coordinator: Gianpietro Venturi - Tel. +39 051 2096652 - Fax +39 051 2096241, Email: gventuri@agrsci.unibo.it. Objectives: The main objective of this project is to promote the development of a competitive, innovative and sustainable hemp fibre textile industry in the EU by:
a) Developing an improved, ecologically sustainable production chain for high quality hemp fibre textiles coupled to an integrated quality system for stems, raw and processed fibres, yarns and fabrics based on eco-labelling criteria.
b) Providing a comprehensive economic assessment of EU and international fibre hemp markets, consumer requirements and EU-production costs and returns. c) Disseminating as much as possible the knowledge generated using the latest information technologies. The project already completed.

EUROFLAX. The activities of the Queens University of Belfast have been on assessing quality of fibre from scutching to yarn and fabric. The following tasks, enzyme-processing steps, environment friendly bleaching recipes to replace chlorite and

application of spectroscopy to evaluate fibre quality were carried out. A number of commercial processes were developed and treated yarn samples were woven to prove the efficacy of the treatments.

CORTEX. Corona irradiation in textile finishing. Project realized with the INF involvement 2002 to 2005.

FLEXIFUNBAR. Multifunctional Barriers For Flexible Structures (Textile, Leather, Paper). Contract nr 505864 (NMP2-CT-2004-505864) Integrated Project, Coordinator: DUFLOT INDUSTRIE S.A. – Caudry, France. The period of realization: 10.2004 – 09.2008. http://194.206.224.27/ Countries participating: Belgium, Finland, France, Germany, Great Britain, Greece, Ireland, Italy, Poland, Portugal, Spain, Sweden. Partners: 50 (more pieces of information in EUROFLAX No 23)

1. *EUROCROP,* Agricultural Research for Improving Arable Crop Competitiveness. SSPE-CT-2006-022757. From 2006. Participants: 19 organisations from 10 countries of Europe: Universite di Bologna, Dipartimento di Economia e Ingegneria Agrarie, (DEIAGRA) Italy; Instituto Tecnologico Agrario de Castilla y Leon (ITACYL) Spain; Federal Agricultural Research Center (FAL) Germany; Institut National de la Recherche Agronomique - Département caractérisation et élaboration des produits issus de l'agriculture (INRA CEPIA) France ; Central Science Laboratory (CSL) United Kingdom; Swiss Federal Research Station for Agroecology and Agriculture (Agroscope FAL) Reckenholz Switzerland; European Seed Association (ESA) Belgium; European Fertilizer Manufacturers Association (EFMA) Belgium; European Crop Protection Association (ECPA) Belgium; Committee of Professional Agricultural Organisations in the European Union (COPA / COGECA) Belgium; Institut du Végétal Technical Institute for Cereals and Forage (ARVALIS) France; Agricultural Research Institute Kromeriz, Ltd. Czech Republic; Union for the Promotion of Oil and Protein Plants (UFOP) Germany; International Institute for Beet Research (IIRB) Belgium; Institute of Natural Fibres (INF) Poznan Poland; British Potato Council (BPC) United Kingdom; European Association for Grain Legumes Research (AEP) France; Confédération Européenne des Producteurs de Mad's (CEPM) France. Prof. Dr. Ryszard Kozlowski is acting as coordinator of the Working Group WP2 (Vision from crop chains of the issues to be addressed to research) as the leader of WG 10 "Fibre crops".

BIOKENAF. BIOmass production chain and growth simulation model for KENAF.
Contract No°: QLK5-CT2002-01729. Coordinator: Centre of Renewable Energy Sources (CRES), Greece. Funding: U.E. Start date: 2003; duration: 3 years. Partners: CRES (Greece), University of Catania (Italy), University of Thessaly (Greece), BTG (France), CETA (Italy), INIA (Spain), FCT/UNL (Portugal), ATO (The Netherlands), UNIBO (Italy), INRA (France), ADAS (UK). Description: The overall objective of the project is to introduce and evaluate kenaf as a non-food crop through an integrated approach for alternative land use in South EU that will provide diversified opportunities for farmers for biological materials for the "bio-based industries" of the future. Specific objectives are: determination of the sustainable yielding potential of kenaf; development of a dynamic growth simulation model; evaluation of the effect of harvesting time and storage methods to the quantity and quality of harvested material; evaluation of the suitability of kenaf for both selected industrial and thermochemical energy applications; environmental assessment and LCA to make scenarios for alternative land use in South EU; economic evaluation of kenaf for alternative land use; preparation of a handbook and booklet for kenaf; link establishment between Biokenaf and AKS (American Kenaf Society).

Please, note: the data about projects are delivered only by INF. The Network members were and are kindly requested to contribute to the list, mentioned in the title of the chapter.

NEWS REGARDING PUBLICATIONS ON NATURAL FIBRES

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

A publication that was probably the unique in the world, which contained scientific publications regarding natural fibres (an English-Polish version yearbook), edited by the Institute of Natural Fibres – Coordination Centre of the FAO Network. Since 2004 *Natural Fibres* is replaced by a new quarterly *Journal of Natural Fibers.*

"JOURNAL OF NATURAL FIBERS"

Journal of Natural Fibers (ISSN: 1544-0478)*, a quarterly edition,* is published by the recognized publishing house The Haworth Press, Inc. Binghamton, NY, USA [for more details see: www.haworthpressinc.com]. *All scientists are welcome to publish relevant papers in this publication.* Contact: Prof. Dr. Ryszard Kozlowski- Editor-in-Chief, fax/tel.: +48(0) 61 8417-830, E-mail: sekretar@inf.poznan.pl or co-editor for USA Richard Kotek Ph.D., College of Textiles North Carolina State

University, Raleigh, E-mail: rkotek@unity.ncsu.edu, tel: (919) 515-6585, fax: (919) 515-6532. For information on the contents, publication schedule, submission requirements, please check - https://www.haworthpress.com/store/product.asp?sku=J395%20.

The publication is advised by the international team of Honorary Editors: A .M. Allam/Egypt, S. Anjing/China, A. Atanassov/Bulgaria, S. K. Batra /USA, A. Bledzki/Germany, N. Chand/India, A. Daenekindt/Belgium, D. M. El-Hariri/Egypt, H.P. Fink/Germany, L. Hes/ Czech Rep., Z. A. M. Ishak/Malaysia, Z. Izsaki/Hungary, U. Kechaiga/Greece, R. Kessler/Germany, F. K. Ko/USA, P. Kolodziejczyk/Canada, J. Lappage/New Zealand, M. Lewin/USA, G. Mackie/Northern Ireland, T. Matsuo/Japan, C. Morvan/France, F. Munder/Germany, K. Perepelkin/Russia, A. Pretova/Slovak Rep., D. Radhavan/India, A. Riva/Spain, R. M. Rowell/USA, D. Sorlino/Argentina, H. Tokura/Japan, G. Venturi/Italy, V.V. Zhivetin/ Russia. The Polish Honorary Editors: H. Burczyk, P. Baraniecki, J. Barriga -Bedoya, R. Fiedorow, J. Flaczyk, K. Heller, B. Mac, I. Maciejowska, M. Mackiewicz-Talarczyk, M. Muzyczek, K. Wielgus, A. Wlochowicz, I. Wojciechowska.

Contents of recent, already published, issues of the Journal of Natural Fibers

Journal of Natural Fibers (ISSN: 1544-0478). Contents of Volume 2, Number 1 2005

1. The Influence Of Growing Factors And Plant Ultivation Methods On Biomass And Fibre Yield Methods On Biomass And Fibre Yield As Well As On Fibre Quality Of Hemp (Cannabis sativa L.), T. Schäfer
2. How Does Light Intensity Affect The Elementary Fiber Length In Flax? M Agosti., D. Sorlino, N. Trapani
3. Trends And Methods In Hemp Breeding In Poland. H. Burczyk., M. Kowalski., M. Plawuszewski
4. Analysis Of Hemp Chemical Pulp Monosaccharide Degradation Compared To Aspen And Spruce Chemical Pulp. F Correira., D Roy
5. Refining Hemp Fibers For Papermaking. C. Delibas, Trass
6. Characterisation And Determination Of Properties Of Sri Lankan Coconut Fibres. S.Y Nanayakkara, R. L. C. Wijesundara
7. Oriented Strandboard (OSB) Panels Made From Kenaf Stalks And Aspen. Poo Chow, D. S Bajwa

Miscellaneous
New patents and technologies:
1. Steam Distillation Of Essential Oils From Hemp Panicles. R. Kaniewski, W. Konczewicz
2. Ecological Linen Underwear. M. Florysiak

Journal of Natural Fibers (ISSN: 1544-0478), Contents of Volume 2, Number 2 2005

1. The Development of the Study on Technique for Introducing Exogenous DNA into Flax in China. Wang Yu Fu , Kang Qing Hua, Liu Yan, Li Xi Chen, Liu Shao Jun
2. Flax Improvement By Biotechnology Means. M. Evtimova, M. Vlahova, A. Atanassov
3. Effect of Lipase Pretreatment on the Dyeability of Wool Fabric. A. Kantouch, W.M. Raslan, and H. El-Sayed
4. Single Bath Full Bleaching of Flax Fibers Using An Activated Sodium Chlorite / Hexamethylene Tetramine System. M.K. Zahran, M.F. Rehan, M.H. El-Rafie
5. Structural Impediments And Prospects For Improved Australian Cotton Production. H. Kidane
6. Toughness Characteristics Of Arenga Pinnata Fibre Concrete. H. A. Razak, T. Ferdiansyah

Columns: The world market: Prospects For Traditional Jute Products. G. Mackie
Miscellaneous: Research applied to global knowledge of flax development. D. Sorlino
Information: Texas Tech University Researchers Develop Materials Friction Software, S. Slemmons

Journal of Natural Fibers (ISSN: 1544-0478), Content of Volume 2, Number 3 2005

1. Composition Of Flax Hypocotyl Fibres. Ch. Andème-Onzighi, O. Douchiche, A. Driouich, C. Morvan
2. Significance Of Different Carbon Sources On Shoot Development Of *Miscanthus* Genotypes. Sz.Toth, P. Pepo
3. Flax Fibers Sorption Properties Influenced By Different Pretreatment Processes. T. Kreže, S. Iskrač, M. Sfiligoj Smole, K. Stana-Kleinschek, S. Strnad, D. Fakin
4. Chemical Finishing Of Linen And Ramie Fabrics. E. Kim, E. Csiszár
5. Low Temperature Chrome Dyeing Of Wool. S.H. Abdel-Fattah, E.M.El-Khatib
6. Highlights On Functional Foods, With Special Reference To Flaxseed. S. Y. Al-Okbi

Reports From Conferences, Symposia, Workshops

- Plant Genetic Resources In Biodiversity Conservation. Report from 2nd Polish Conference. G. Silska
- Information about the 2nd International Conference on Plant Ontogenesis in Natural and Transformed Environments. Physiological, Biochemical and Ecological Aspects. K. Heller, M. Byczynska

Journal of Natural Fibers (ISSN: 1544-0478). Contents of Volume 2, Issue: 4 2005

1. The Effect Of Nitrogen Dose, Sowing Density And Time Of Harvest On Development And Yields Of Hemp Cultivar Bialobrzeskie. L. Grabowska, W. Koziara

2. Hemp Fiber Microstructure And Use Of Fungal Defibration To Obtain Fibers For Composite Materials. A. Thygesen, G. Daniel, H. Lilholt, A. B. Thomsen
3.The Beneficial Influence Of Enzymatic Scouring On Cotton Properties. J. Kim, S. Y. Kim, E. K. Choe
4. Preparation Of Cotton Materials Using Corona Discharge. N. Carneiro; A.P. Souto; C. Nogueira; A. Madureira; C. Krebs; S. Cooper
5. Evaluation Of The Influence Of Fibre Length And Concentration On Mechanical Performance Of Hemp Fibre Reinforced Polypropylene Composite. M. Pervaiz, M. Sain, A. Ghosh

Columns

1. Information About New Books:
   - E.L. Pashin "Agricultural Production and Technological Quality of Flax" (In Russian: "Agroproizvodstvo I Tekhnologicheskoye Kachestvo L'na"), Kostroma 2004, 208 Pages – Information Prepared by R. Fiedorow
   - S. J. Kowalski, Thermomechanics Of Drying Processes, Springer Verlag Berlin Heidelberg New York, 2003, 365 Pages – Information Prepared by R. Kaniewski
2. Reports From Conferences: Report on The 3rd Global Workshop (General Consultation) of the FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants. "*Bast Fibrous Plants For Healthy Life",* hold on October 24-28, 2004 in Banja Luka, Bosnia and Herzegovina, Republic of Srpska - Prepared by M. Mackiewicz-Talarczyk, I. Maciejowska
3. Press Release: The Report of China Textile Industry Development Published

Journal of Natural Fibers. Contents of Volume 3, Issue 1 2006

1. Importance of Collected Flax Germplasm (*Linum usitatissimum* L.) Characterization. Nozkova J. –Brindza J. – Stehlikova B. – Pavelek M.
2. Nutrient Uptake of Miscanthus in vitro Cultures. Szilard Toth, Pal Pepo
3. Dynamic Simulation of the Harvest Operations of Flax Straw for Short Fibre Production. Daniel Nilsson
4. Thermogravimetric Analysis of the Flax Bast Fibre Bundle. Titok V., Leontiev V., Shostak L., Khotyleva L.
5. Effect of Citric Acid Modification of Aspen Wood on Sorption of Copper Ion. James D. McSweeny, Roger M. Rowell, Soo-Hong Min
6. Influence of Fineness, Stiffness and Load-displacement Characteristic of Natural Fibres on the Properties of Natural Fibre Reinforced Polymers. Müssig, J. , Rau, S. , Herrmann A.S

Note: Content of Issue No 1 and 2 in the EUROFLAX No 2, the content of issue 3 and 4 of Volume 1 are provided in the EUROFLAX No 23 and on the request.

Journal of Natural Fibers special issue: Biotechnology in Textile Processing -see
http://www.haworthpressinc.com/journals/jdispresults.asp?sid=XT1WCWNXVETU8H041AH03P52P04H0KAE&sku=J395
Table of contents:

Antagonism of *Trichoderma* or *Gliocladium* species on two phytopathogenic species of *Fusarium* Mahmoud A. Shoulkamy, Georg Guebitz, Momein H.A. El-Katatny, Gehan M. Shaban and Hani M.A. AbdelZaher

Production of cellulase-free polygalacturonase preparation by *Sclerotium rolfsii* for bioscouring of cotton W. Schnitzhofer, A. Kandelbauer, B. Klug-Santner, M. Onos, M. Calafell, G. M. Gübitz

Enzymatic Modification of Hemp Fibres for Sustainable Production of High Quality Materials: Influence of Processing Parameters H. Fischer, J. Müssig, C. Bluhm,

Enzyme-Retted Flax using Different Formulations and Processed Through the USDA Flax Fiber Pilot Plant Danny E. Akin, Jonn A. Foulk, Roy B. Dodd, and Helen H. Epps

Influence of enzymatic pretreatment on the colours of bleached and dyed flax fibres Darinka Fakin, Vera Golob, Karin Stana-Kleinschek

Combined bioscouring and bleaching of cotton fibres P. Forte Tavčer, P. Križman, P. Preša

The Effects of Ultrasound on the Performance of Industrial Enzymes Used in Cotton Bio-preparation/Bio-finishing Applications. Val G. Yachmenev, Timothy Calamari, Jr., and Allan H. Lambert

Survey and Recent Report on Enzymatic Processing of Bast Fibers J. Batog, W. Konczewicz, R. Kozlowski, M. Muzyczek, N. Sedelnik, B. Tanska

Laccase catalyzed Indigo Carmine transformation Andreas Kandelbauer, Oliver Maute, Matthias Kimmig, Rudolf W. Kessler, Georg M. Gübitz

Optimization of the Enzymatic Scouring Juhea Kim, Eun Kyung Choe, Su Yeon Kim*, Sung Woo Nam

Designing wood fibre morphology and mechanical properties of fibreboards Andrea Ganz, Andreas Kandelbauer, Waltraud Kessler, Rudolf W. Kessler and Rupert Wimmer

Enzymatic Scouring for Better Textile Properties of Knitted Cotton Fabrics Ana Marija Grancaric ,Tanja Pusic, Anita Tarbuk

Integrated Enzymatic Pre-treatment of Cotton Fabrics Jadwiga Sojka-Ledakowicz, Joanna Lichawska, Rita Pyc;

Enzymatic finishing of wool fabrics: Effects of different treatments with protease on physical and chemical parameters of the fabric A. Riva, I. Algaba, R. Prieto

Analytical methods for chitosan Wiener J., Machaňová D., Müllerová J., Krátký O.

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

- Newsletter of the ad Hoc Research Group (the Group acted from 1989 to June 1993) – 9 issues

EUROFLAX Newsletter

Information Bulletin *EUROFLAX Newsletter* – 24 issues since 1994 (200 printed copies, reaches subscribers and Network members in 52 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
- CD Proceedings of "Bast Fibrous Plants for Healthy Life", October 24-28, 2004, Banja Luka, Bosnia and Herzegovina, Republic of Srpska

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
- 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
- Proceedings of the Workshop of the FAO/ESCORENA Network: Mapping of European Germplasm for International Flax Data Base Creation, use in Breeding for different Flax and Linseed Varieties, September 18 – 19, 2002, Šumperk, Czech Republic
- CD Proceedings of the Conference "Flax and Allied Fibre Plants for Human Welfare", December 8-11, 2003, NRC, Cairo, Egypt
- CD Proceedings of the Conference 11th International Conference on Renewable Resources and Plant Biotechnology NAROSSA® 2005, Institute of Natural Fibres, Poznan, Poland, June 6-7, 2005
- CD Proceedings of the FAO/ESCORENA International Conference "Textiles for sustainable development", CSIR, Port Elizabeth, South Africa, October 23-27, 2005

OTHER RELATED PUBLICATIONS

Industrial Crops

- Journal of Natural Fibers. published by the publishing house The Haworth Press, Inc. Binghamton, NY, USA [for more details see: www.haworthpressinc.com]. For more see page 17.
- 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, tel.: (403) 507-5206, fax: (403) 507-7977, e-mail: relvestad@admin.oldscollege.ab.ca, www.occi.ab.ca
- Polish Flax and Hemp Chamber bulletin - Biuletyn Informacyjny Polskiej Izby Lnu i Konopi: "LEN I KONOPIE", ISSN 1731-4828, Poznan, Poland, e-mail: hempflax@inf.poznan.pl (bi-annual)
- 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/Zürich, Switzerland
- CSL News, published by Central Science Laboratory, Sand Hutton, York, UK. e-mail: science@cls.gov.uk
- The newest issue of the Journal of Textile and Apparel, Technology and Management (JTATM), is available (http://www.tx.ncsu.edu/jtatm)
- Kozlowski R, Wladyka-Przybylak M.: Chapter 10 Natural Polymers Wood and Lignocellulosic. – in book " Fire Retardant Materials" ed. by Horrocks, Woodhead Publishing Limited, Cambridge, Great Britain, 1999
- Kozlowski R., Wladyka-Przybylak M: Chapter 14 Uses of Natural Fiber Reinforced Plastics in book "Natural Fibers, Plastics and Composites" ed.by F.T. Wallenberger and Norman E. Weston Kluwer Academic Publishers, Boston, Dordrecht, New York, London 2004
- Cook Gordon J.: Handbook of Textile Fibres. 5th ed. Cambridge England: Woodhead Publishing Ltd., 2001
- Schenk Anton: Naturfaser Lexikon. Frankfurt am Main: Deutscher Fachverlag, 2000
- V. V. Zhivetin, L. N. Ginzburg, O. M . Ol'sanskaja: Len i Jego Kompleksnoje ispol'zovanje (Flax and its Complex Utilization- publication in Russian). M.: Inform-Znanije, 2002. Moscow, Russia

- Daniel Nilsson: Analysis and Simulation of Systems for Delivery of Fuel Straw to District Heating Plants. ACTA UNIVERSITATIS AGRICULTURAE SUECIAE.. SWEDISH UNIVERISTY OF AGRICULTURAL SCIENCE. AGRARIA 205. doctoral thesis, Uppsala 1999
- Gennady E. Zaikov (N. M. Emanuel Institute of Biochemical Physics, Moscow, Russia), Ryszard Kozlowski (Institute of Natural Fibres, Poznan, Poland) - Editors: CHEMICAL AND PHYSICAL PROPERTIES OF POLYMERS, NOVA SCIENCE PUBLISHERS, INC., NY, USA, 2005. ISBN: 1-59454-206-6.
- Bast and other Plant Fibres, Edited by Robert R. Franck, Consultant, UK. Woodhead Publishing Limited, Cambridge, England. 2005. Chapter: Ramie, prepared by R. Kozlowski, M. Rawluk, J. Barriga-Bedoya of the Institute of Natural Fibres, Poland. pp. 207-226, www.woodheadpublishing.com
- Biodegradable and Sustainable Fibres. Edited by R. S. Blackburn. Woodhead Publishing in Textiles, Cambridge, England. 2005. Chapter: Bast Fibres (flax, hemp, jute, ramie, kenaf, abaca) prepared by R. Kozlowski, P. Baraniecki, J. Barriga-Bedoya of the Institute of Natural Fibres, Poland. pp. 36-85, www.woodheadpublishing.com
- The Manual for Flax Growers. Elaborated by the Institute of Natural Fibres, Poznan, Poland. (in print, in Polish, could be translated into English)

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
- Henryk Burczyk: Hemp Cultivated for Seeds – The Manual for Hemp Farmers (available at the Institute of Natural Fibres, Poznan, Poland)
- Mathias Broeckers: Cannabis. Hanf. Hemp. Hanvre. Cañamo. Nachtschatten Verlag, 2002, Für die Deutsch Sprächige Ausgabe. AT Verlag, Aarau, Schweitz.
- Paolo Ranalli: Advancements in Hemp Research. Haworth Press Inc., USA. 1999

INFORMATION ABOUT INTERNATIONAL CONFERENCES CONNECTED WITH NATURAL FIBRES AND TEXTILES

Conferences

2006

- June 4-7, 2006. *4th International conference on Textile Biotechnology*, Seoul, Korea, contact person: Ms. Eun Kyung Choe, KITECH, Seoul, Korea, E-mail: ekchoe@cosmos.kitech.re.kr, www.intb.org

- June 7-8, 2006. *International Nonwovens Symposium,* Vienna, Austria. Organiser: EDANA, Avenue Eugène Plasky, 157, B-1030 Brussels, Belgium. Contact: Tel.: +32 2 734 93 10, Fax: +32 2 733 35 18, E-mail: info@edana.org, www.edana.org

- June 9, 2006, CLOTECH 2006 – 3rd Science-Technical Conference **"Directions of Development of New Sewn Textiles"** , International Education Centre (IFE), Lodz, Poland. Organisers: Technical University of Lodz, Faculty of Textile Engineering and Marketing Department of Clothing Technology of Technical University of Lodz, Université de la Mode – Fashion and Industrial Design Special Studies. Contact: Secretariat: M. Kwiatkowska, M. Sc., Technical University of Lodz Faculty of Textile Engineering and Marketing, ul. Zeromskiego 116, 90-543 Lodz, Poland, Tel.: (+ 48 42) 631 33 21, E-mail: mkwiat@p.lodz.pl

- June 12-13, 2006. *12th International Conference on Renewable Resources and Plant Biotechnology NAROSSA® 2006*, Magdeburg, Germany, Contact person: Dr. Frank Pudel, ÖHMI Consulting GmbH, Managing Director, Berliner Chaussee 66, 39114 Magdeburg, Germany, Tel.: +49-391-8507-0, Fax: +49-391-8507-150, E-mail: narossa@oehmi-consulting.de. Event co-organised by Institute of Natural Fibres, Poznan, Poland

- June 18-23, 2006. *The IAF 22nd World Apparel Convention*, Thessaloniki, Greece. Organised by the International Apparel Federation (IAF) in conjuction with the Hellenic Fashion Industry Association (Thessaloniki) and the Hellenic Clothing Industry Association (Athens). Organiser contact: **CLOTEFI SA -** Clothing Textile and Fibre Technological Development SA, 4, Eleftheriou Venizelou Str, GR-17676 Kallithea, Athens, Greece, Tel.: +30 210 92 34 932, Fax: +30 210 92 35 603, www.iaf2006.com
  Contact: Mrs. Dora Economou, doral@skee.gr at the Hellenic Clothing Industry Association (SKEE), 51 Ermou st., GR - 105 63 Athens, Greece tel +30 210 3223979, fax +30 210 3239159.

- June 29– July 1, 2006, *Knitt-Tech 2006 Conference 'New Techniques and Technologies in Knitting'*
  Ciechocinek, Poland. Organisers: Technical University of Lodz, Department of Knitting Technologies and Structure of Knitted Products, TRICOTEXTIL Institute of Knitting Technologies and Techniques. Contact: Zbigniew Mikolajczyk Ph.d.,Eng., Tel.: (48-42) 631-33-38. Malgorzata Fratczak, Tel./Fax: (0-42) 631-33-31, E-mail: katdziew@p.lodz.pl, Technical University of Lodz, Faculty of Textile Engineering and Marketing, Department of Knitting Technologies and Structure of Knitted Products, ul. Zeromskiego 116, 90-543 Lodz, Poland

- August 30 – 1 September, 2006. *5th International Conference on Sustainable Energy Technologies, Vicenza, Italy*. Conference Secretariat: Fondazione Studi Universitari di Vicenza, Stradella S. Nicola, 3, 36100 Vicenza (VI) Italy, Tel.: +39 0444 998894, Fax: +39 0444 998899, E-mail: secretariat.set2006@gest.unipd.it, Website: http://www2.gest.unipd.it/set2006/

- October 1-5, 2006, *THE 53th CONGRESS OF THE INTERNATIONAL FEDERATION OF KNITTING TECHNOLOGISTS 'Knitting Today and Tomorrow'.* Plovdiv, Bulgaria, Organisers: Scientific and Technical Union of Textiles Ready-made Clothing and Leathers, The Bulgarian Section of The International Federation of Knitting Technologists, International Federation of Knitting Technologists (IFKT). Contact: Bulgaria, Sofia 1000, 108 Rakovsky Str, E-mail: congress43ifkt@mail.bg or congress43ifkt@yahoo.com
  www.43kongresIFKT.com

- October 3-4, 2006. International Symposium *'Nanotechnologies in textiles' INTERNANO-TEX 2006*, Lodz, Poland. Organisers: Technical University of Lodz, Faculty of Textile Engineering and Marketing, Department of Man-made Fibres, *Polish Textile Association*. Chairman of the Organising Committee: Prof. Dr. Bogumil Laszkiewicz, Ph.D., D.Sc., Tel.: +48 42 631 3338. The scope of the conference includes themes connected with preparation, properties and applications of nanofibers, nanofibers composities and interactive nanotextiles.
  Contact: Piotr Kulpinski, Ph.D., Tel.: +48 (42) 631 33 62, E-mail: internanotex@mail.p.lodz.pl

- October 8-11, 2006. *International Textile, Clothing & Design Conference: Magic World of Textiles*, Dubrovnik, Croatia. Organisers: The Faculty of Textile Technology, University of Zagreb, Croatia. www.itcdc.ttf.hr.For more information please contact: Prof. Zvonko Dragcevic, Ph. D., Tel.: +385 1 37 12 542, Tel./Fax: +385 1 37 12 535, E-mail: zvonko.dragcevic@ttf.hr\

- October 12-13, 2006. *2nd BTL-Congress. Congress regarding synthetic fuels from biomass, so-called BtL-fuels (biomass-to-liquid)*, Berlin, Germany. Organiser: Fachagentur Nachwachsende Rohstoffe (FNR) with DaimlerChrysler and Volkswagen AG. FNR- Hofplatz 1, D-18276 Gülzow, Tel. 03843/6930-117, E-mail: t.gabriel@fnr.de, www.fnr.de, www.nachwachsende-rohstoffe.de. Website of the event: http://www.fnr.de/btl-congress/

- October 19-20, 2006. *European Conference on Biorefinery Research*, Marina Congress Center, Helsinki. A major conference on biorefinery research organised by the European Commission with the support of the Finnish Presidency. For updated information on this event, please consult this website regularly http://europa.eu.int/comm/research/energy/gp/gp_events/biorefinary/article_3764_en.htm
  or contact the Conference Helpdesk rtd-biorefinery-event@cec.eu.int

- October 20, 2006. ***Symposium on technical uses of flax and hemp***, Prague, Czech Republic. Organiser: CELC, 15 rue du Louvre, F-75001 Paris, France. Contact: Tel. +33 142 21 02 35, Fax: +33 142 21 48 22, E-mail: celc.sg@wanadoo.fr. The event will be held on the occasion of the CELC-congress in October 2006 in Prague.

- November 21-22 , 2006. Annual conference of the EIHA (European Industrial Hemp Association), conference Hotel EuroMedia Apart-Hotel in Hürth near Köln, Germany. Organizer: Mr. Michael Karus, Nova Institute, E-mail: michael.karus@nova-institut.de, website: http://www.eiha.org/conference4th/

- November 21-24, 2006. ***8th Pacific RIM Bio-based Composites Symposium***. Kuala Lumpur, Malaysia. Contact: Dr. Mohd Nor Mohd Yusoff, Chairman of Technical Committee. Tel.: 603-6279 7280, Fax: 603-6280 4620, E-mail: mdnor@frim.gov.my, symposium website: http://www.frim.gov.my/newsevent_reg2.cfm

- November 28th to December 1st 2006. ***III Symposium on Natural Fibres, Full Use of Fibres and Textile Applications (FIBRATEX 2006),*** as a part of **13th SCIENTIFIC CONVENTION ON ENGINEERING AND ARCHITECTURE (CCIA 2006),** CUJAE, Cuba, Havana**,** November 28th to December 1st 2006. Organizer of **FIBRATEX 2006**: El Instituto Superior Politécnico "José Antonio Echeverría" (CUJAE). Contact person: Ms. Martha Mazorra Mestre, Jefa Grupo de Tensioactivos y Emulsiones, Universidad Técnica de Energía Renovable (UTER), CUJAE. Cuba, Havana, Tel.: 537-266 3633, E-mail : marta@ceter.cujae.edu.cu, conrado@ceter.cujae.edu.cu, http://www.cujae.edu.cu/DocumentosHTML/Vinculos/CCIA%202006.htm

- December 7-8, 2006. ***Conference on Natural Fibres: Vision 2020*** organised by North India Section of Textile Institute (NISTI), New Delhi, India. Contact person: Prof. R. Chattopadhyay, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, Tel.: + 91-11-26591412 (O), +91-11-26581977 (R), Fax: +91- 11-2658-1103, E-mail: rchat@textile.iitd.ernet.in and Prof. V. K. Kothari, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, Tel.: +91-11-26591401 (O), +91-11-26591937(R), Fax: +91- 11-2658-1103, E-mail: kotharivk@gmail.com

2007

September 2007. ***IX International Cotton Conference "Future of Cellulosic Fibres",*** Gdynia, Poland. Organisers:
- Technical University of Lodz, Department of Spinning Technology, Department of Clothing Technology, contact: Technical University of Lodz, Faculty of Textile Engineering and Marketing, ul. Zeromskiego 116, 90-543 Lodz, Tel.: + 48 42 631 33 35
- Gdynia Cotton Association, contact: Gdynia Cotton Association, ul. Derdowskiego 7, 81-369 Gdynia, tel.+48 58 620 75 98, fax +48 58 620 75 97, e-mail: ib@gca.org.pl , www.cotton.org.pl

2008

- July 21 to 23, 2008. Pan American Conference on Flax and other Bast Plants 2008, Saskatoon. Organized by the Saskatchewan Flax Development Commission (SaskFlax), FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants. Topics connected with agronomy, harvesting, processing, end uses (including plastic composites, insulation, textiles, filtration, geotextiles, fuel), grading and standards. Canadian Conference Coordinator Ms. Penny Eaton, e-mail: penny@eatonassociates.ca. Contacts: Ms. Linda Braun, Executive Director, Saskatchewan Flax Development Commission (SaskFlax), A5A - 116 - 103rd Street East, Saskatoon, Saskatchewan, Canada S7N 1Y7 Telephone: (306) 664-1901; Fax: (306) 664-4404 or email saskflax@saskflax.com and Mr. Alvin Ulrich, Crop Fibers Canada, 161 Jessop Avenue, Saskatoon, Saskatchewan, Canada S7N 1Y3, Telephone: (306) 955-4506, Fax: (306) 668-0131 or email: ulricha@cropfiberscanada.ca

Fairs connected with textiles

- July 11-14, 2006, ***Hong Kong Intl Textile & Garment Machinery & Technology Fair,*** Hong Kong, China. Contact: Tel.: +(852)-(852)-25165024, www.adsale.com.hk

- September 13-15, 2006. ***Baltic Textile + Leather,*** Vilnius, Lithuania. **Contact:** LATIA. Tel.: +370 5 273 4789, Fax: +370 5 273 4787, E-mail: latia@latia.lt. www.latia.lt

- September 20-22, 2006. ***Fachmesse COMPOSITES EUROPE 2006*** , Essen, Germany

- September 5-8, 2006. ITE - ***Textile Expo Uzbekistan,*** Tashkent, Uzbekistan. Contact: *ITE Uzbekistan* Tel.: +998 71 113 0 180, Fax: +998 71 151 2164, E-mail: gulnoza@ite-uzbekistan.uz http://www.ite-uzbekistan.uz

- October 3-6, 2006, *Textile Expo Russia 2006*. 1st Russian International Textile Machinery Exhibition Moscow, Russia

- October 17-21, 2006. *CITME 2006 (China International Textile Machinery Exhibition),* Beijing, China. Contact: Tel.: +49 89 949 22-350, www.imag.de,

2007

- February 13-15, 2007. *Textile Trends' – International Conference and Exhibition*, Berlin, Germany

- March 14-17, 2007, *7th AAMA-TEX 2007 (Asia Apparel Machinery & Accessories Exhibition)* Singapore Expo, Singapore. Contact: Tel.: 6743 0113, E-mail: smtas@smtas.org.sg

- June 12-14, 2007, *Techtextil Frankfurt 2007.* Frankfurt am Main, Germany. Contact: Tel.: +49 69 7575 6541, www.techtextil.com

- September 13-20, 2007. *ITMA 2007.* Munich, Germany. More information: www.itma-munich.com

STATISTICAL DATA ON FLAX

FIBROUS FLAX IN THE WORLD

FIBROUS FLAX CULTIVATED AREA IN THE WORLD [ha]

	2000	2001	2002	2003	2004	2005	2006 Est.
AUSTRIA	450[1/]	132[1/]	171[6/]	142[5/]	109[6/]	134[1/]	
BELARUS	81 800	70 000°	67 900	70 900	79 000	78 500	
BELGIUM	13 355[3/]	16 990[3/]	15 567[5/]	19 250[5/]	19 823[1/]	18 760 [1/]	16 500
BULGARIA	300	210	470	150°	70		
CHINA	100 000[6/] °	100 000[6/]	80 000[6/]	133 000[6/]	200 000[6/] 130 000[7/]	130 000	
CZECH REPUBLIC	6 302-	7 095	5 885	6 003	5 500	4 318[1/]	3 500
DENMARK	45[1/]	19[1/]	0 [1/]	0 [1/]	*/	*/	
EGYPT	3 994[9/]	7 649[9/]	8 936[9/]	13 010[9/]	17 138[9/]	5 847[9/]	
ESTONIA	137	89	35	17	0	Fibrous Flax 0, Linseed 91ha	
FINLAND	1 067[1/]	365[6/]	202[5/]	97[5/]	67[5/]	*/	
FRANCE	55 629[3/]	67 970[3/]	68 416[1/]	76 439[5/ x]	80 081[1/]	81 508[1/]	73 000
GERMANY	402[1/]	200[1/]	200[6/]	224[6/]	180[6/]	38[1/]	
IRELAND	*/	0[3/]	*/	*/	*/	*/	
ITALY	*/	1[3/]	0[5/]	20[5/]	80	*/	
LATVIA	300-linseed; 1600-fibre flax	*/	*/	*/	1 654[6/]	1 654[1/]	
LITHUANIA	8 600	9 600	9 346	10 000	5 494	4 300[1/]	2 000
NETHERLANDS	4 016[1/]	4 415[1/]	4 000[5/]	4615[5/]	4517[1/]	4 691[1/]	4 200
POLAND	5 093[4/]	4 520[4/]	5 100[4/]	6 000[4/]	6 345 [4/]	6843[4]	4235
PORTUGAL	3 522[3/]	0[3/]	0[1/]	*/	*/	*/	
RUMANIA	2 000[6/]	300[6/]	300[6/]	*/	*/	*/	
RUSSIA	107 610	127 340 127 361[6/]	110 820 100 000[6/]	118 060 104 000[6/]	112 300	95 450	
SPAIN	13 595[3/]	342[1/]	60[5/]	2[5/]	*/	*/	
SWEDEN	21[1/]	32[3/]	25[1/]	0[1/]	30[1/]	*/	
UKRAINE	19 300	28 280	28 200	32 480[8/]	38 220[8/]	25 530[8/]	
UNITED KINGDOM	11 816[3/]	4 430[1/]	156[5/]	175[5/]	1820[1/]	*/	

Total flax cultivated area in EU countries: in 2000 103 867[3/] ha, in 2001 94 631[3/]ha, in 2002 : 88 885[1/]ha, in 2003: 98 965[1/]ha., in campaign 2004/2005: 118 251 ha, in campaign 2005/2006: 117 036 ha

Source: Generally, data provided by relevant countries' official organizations (see also the country data). Those data are not marked. Another source of information is described below:

[1/] A. Daenekindt: Algemeen Belgisch Vlasverbond, Oude Vestingsstraat 15, B-8500 Kortrijk, Belgium, e-mail: albert.daenekindt@vlasverbond.be

[2/] FAOSTAT Statistical Database Results 1997 http://apps.fao.org

[3/] 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

[4/] Polish Chamber of Flax and Hemp, office at the Institute of Natural Fibres, Poznan, Poland, t.: +48-61 8 455 851, f.: +48 61 8 417 830, hempflax@inf.poznan.pl

[5/] 54ème Congrès CELC – Berlin, Réunion d'information Générale / Section commune Culture-Teillage

[6/] CELC/MASTERS OF LINEN, 15, rue du Louvre, 75001 Paris, France, t.: +33(0)1 42 21 06 83, f. : +33(0)1 42 21 48 22, e-mail : info@mastersoflinen.com

[7/] data from the Research Institute of Industrial Crops, Heilong Academy of Agricultural Sciences, Harbin, China, 150086

[8/] Dr Pavel Goloborod'ko, Institute of Bast Crops, Lenina 45, 245130 Glukhov, Sumy, Ukraine, t./f: 3805444 22643

[9/] Prof. Dr. D. M. El-Hariri, The Network Representative in the Near East, NRC, Cairo, Egypt, e-mail: profelhariri@netscape.net; acc. to Agricultural Economics Bulletins of the Central Administration for Agricultural Economics and Statistics of Egypt.

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, 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: albert.daenekindt@vlasverbond.be.
Scutched flax

Water-retted		Dew-retted	
long fibre			
Quality	Prices EURO/100kg	Quality	Prices EURO/100kg
lower quality	up to 148.75	lower quality	up to 123.95
medium quality	148.76 - 173.50	medium quality	123.96 - 148.75
better quality	173.51 - 185.90	better quality	148.76 - 173.50
very good quality	bonus	very good quality	from 173.50
short fibre			
lower quality up to 9.90 EURO/100kg			
medium quality 9.91 - 14.85 EURO/100kg			
better quality from 14.85 EURO/100kg			
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by-products			
• wasted parts of the straw; dew retted price: up to 3.10 EURO/100kg • wasted parts of the straw price: up to 4.0 EURO/100kg • by-products from deseeding price: 2.48 EURO/100kg • short scutched fibre wastes: from 10.00 EURO/100kg • shives used for particleboard production: from 2.50 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 percent farmer/75 percent scutcher).
2000
Subsidy per hectare (gross = net): 795,46 Euro (25 percent farmer/75 percent scutcher).
2001
With the crop 2001 started a new and completely modified Common Organization 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 percent 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
The 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 tonne for long flax fibres;
– 90 euro per tonne 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.

2003 and 2004

Same system and amounts as for the crop 2002.
1. Grower: basis subsidy 63 euro/tonne;
2. Processor (scutcher):
– 160 euro per tonne for long flax fibres;
– 90 euro per tonne 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.

2005

1. Grower

In Belgium, the latest reform of the common agricultural policy - commonly known as the Mid Term Review (MTR) - was implemented already in 2005. France and the Netherlands postponed the implementation until 2006.
The key word of MTR is decoupling. Most of the subsidies the farmer used to receive as direct aid are replaced by a single payment. In order to receive this payment, the farmer has to activate the entitlements he has been assigned, not necessarily by growing a specific crop (decoupling). It is sufficient to keep the soil in a good agricultural condition.
Since the entitlements to the single payment are calculated on the basis of the number of hectares/animals declared during the reference years 2000, 2001 and 2002, their number and amount differ from one farm to another.

2. Primary processor (scutcher)

Same system and amount as for the previous crops:
2.1. production subsidy:
- 160 euro per tonne for long flax fibres;
- 90 euro per tonne for short flax fibres and hemp fibres.
2.2. additional subsidy (Netherlands, Belgium and some regions in the North of France)
- for northern regions: 120 euro per hectare;
- for southern regions: 50 euro per hectare.

2006

1. Grower

idem crop 2005

2. Primary processor

Not clear for the moment (December 2005). The European Commission is evaluating the common organisation of the markets in flax and hemp grown for the fibre, including the processing aid.

COUNTRY DATA ON FIBRE FLAX.

The possessed data regarding acreage of cultivated flax is provided in the general table: FLAX CULTIVATED AREA IN THE WORLD [ha]. We will try to up-date the other data in the next issues of the Newsletter. In this issue we are providing only the set of country data, which are complete and up-dated.

BELARUS

	1999	2000[1/]	2001	2002	2003	2004	2005
Cultivated area [ha]							
Belarussian data	70 000[1/]	81 800[1/]		67 900[2/]	70 900[2/]	79 000[2/]	78 500
MASTERS OF LINEN data		81 800[3/]	70 000[3/]	40 000[3/]	60 000[3/]	79 146[3/]	

sent by: [1/] I.J. Jarmolovitch, Ministry of Statistics ands Analysis of RB, Minsk, Belarus (2000)
[2/] "Agriculture of the Republic of Belarus". Th e Assemblage of Statistical Office UP MINSTAT, Minsk, Belarus (data collected and sent by Dr A. A. Lopatnyuk, Ms. L. A. Tinjiakova, The Institute of Agrarian Economics, Minsk, Belarus, E-mail: agrecinst@mail.belpak.by)
[3/] CELC/MASTERS OF LINEN, 15, rue du Louvre, 75001 Paris, France, tel. +33(0)1 42 21 06 83, fax +33(0)1 42 21 48 22, E-mail : info@mastersoflinen.com

BULGARIA

	1999	2000	2001	2002	2003	2004
Cultivated area [ha]	58	300	210	470	150	70

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

CZECH REPUBLIC

	1998	1999	2000	2001	2002	2003	2004	2005
Cultivated area [ha]	4117	5348	6302	7 124	5885	6003	5499	4 690*
Harvested [ha]	3719	5232	5911	7 124	5825	5953	5 499	
Straw yield [t/ha]	3.01	3.34	2,36	3,23	2,73	2,32	3,6	
Long fibre yield [t/ha]	0.3	0,39	0,35	0,24	0,35	0,32	0,53	
Long fibre production [t]	1235	2098	2235	1591	2100	1884	2 930	
Short fibre yield [t/ha]	0.5	0,53	0,42	0,44	0,42	0,32	0,51	
Short fibre production [t]	1835	2797	2661	3141	2 570	1928	2 850	
Percentage of dew retting [percent]	100	100	100	100	100	100	100	
Mill consumption of flax [t]	11200	17484	16811	18526	17 508	15 161	13 150	
Linseed yield [t/ha]*of fibre flax	0.51	0.56	0,50	0,5	0,5	0,5	0,5	
Yarn production [t] (wet + dry spinning)	3850	4835	5301	4300	4150	3894	4020	
Production of textiles [1000 m]	12160	*	*	*	*	*	*	
Particleboards production [m^2]		0	0	0	0	0	0	
Export of seed [t]	730	1340	3421	2526	2187	4 136	3 257	
Export of yarn [t]	1202	1364	1839	1430	1531	2 088	2 029	
Export of fibre [t]	100	90	267	207	226	89	36	
Export of linen textiles (fabrics) [1000 m]	°	*	*	*	*	*	*	
Export of cloth (more than 85 percent linen) [t]	1830	2138	2470	1996	1854	1 777	1906	
Export of cloth (less than 85 percent linen) [t]	180	184	264	183	190	176	150	
Import of fibre [t]	2248	2925	3001	3169	3457	2 603	2 960	
Import of yarn [t]	79	349	456	279	202	358	563	
Import of textiles [1000 m]	°	*	*	*	*	*	*	
Import of seed [t]	771	561	449	356	376	527	341	
Import of linen cloth (more than 85 percent linen) [t]	16	512	609	514	568	353	306	
Import of linen cloth (less than 85 percent linen)[t]	28	76	103	78	84	74	184	

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

Linseed (flaxseed) in Czech Republic

Czech Republic	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cultivated area [ha]	600	646	2 251	1 700	3 280	2 548	5 345	2 154	3000*

ESTONIA

Fibre Flax

	1997	1999	2000	2001	2002	2003	2004	2005
Cultivated area [ha]	323	115	137	89	35*)	17	0	Fibrous Flax 0, Linseed 91ha
Straw yield [t/ha]	0,198	0,513	0,577	1,180	1,971	0	0	0
Long fibre yield [t/ha]								
Long fibre production [t]								
Short fibre yield [t/ha]								
Short fibre production [t]								
Percentage of dew retting [percent]								
Mill consumption of flax [t]								
Linseed yield [t/ha]	0,303	0,513	0,831	0,931	0,916	0,532	0,831*)	1,257
Yarn production [t] (wet + dry spinning)								
Production of textiles [1000 m]x)	10	3910	7058	9376	…	…	…	
Particleboards production [m^2]								
Export of seed [t]xx)	0	0	0	0	0	0	0	
Export of yarn [t]	79	334	1189	807	896	1266	1200	
Export of fibre [t]	44	17	49	125	223	49	90	
Export of linen textiles (fabrics) [1000 m]								
Export of cloth [1000 m^2]	6	4053	6730	9084	8653	8206	7535	
Import of fibre [t]	154	1486	2822	3021	2440	2553	2607	
Import of yarn [t]	12	179	222	98	518	477	495*)	

Source: VORU FLAX-MILL and CENTRAL UNION OF ESTONIAN FLAX, Voru, Estonia (1993-1995)
and Mr. Einar Kikkas, Department of Agriculture, Ministry of agriculture, Tallinn, Estonia
*) data for the previous years are revised; **) data on export, import are presented by the special trade system;… data not available
- magnitude nil
SOE presents the data of the flax production from 1993 to 2002 in Estonia. Until 1999 fibre flax was planted. Since 2000 oil flax and fibre flax were planted. Data of oil flax sown area and yield are not included in this table.Stalks yields are estimated on the basis of the production (the quantities) and sown area; At present data of long fibre and shot fibre production are not available, but external trade covers these products from 1995.Production of textiles are evaluated in square metre in Estonia. X) data are confidential, XX) included seeds of oil and fibre flax.

FINLAND

	1998	1999	2000	2001	2002	2003	2004
Flax cultivated area [ha]	613	850	1067	365	202	97	67

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

LATVIA

	2000	2001	2002	2003	2004	2005
Flax cultivated area [ha]	1 600	0	0	0	1 654	

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

LITHUANIA

	1999**/	2000**/	2001	2002	2003	2004	2005
Fibre Flax Cultivated area [ha]	8 600	8 600	9600	9346	9444 plus 200 ha linseed	5600 plus 200 ha linseed	3800ha fibre flax, 500ha of linseed. Total 4300ha*

Source: **/ O. Jukneviciene, Minist. of Agricul., Dep. of Strategy of Plant Production, Prospekt Gedimino 19, Vilnus, Lithuania; completed by Dr. Director Algimantas Endriukaitis, LIA – The Lithuanian Institute of Agriculture Upyte Research Station, Linininku 3, Upyte, 38 294 Panevezys Distr., LITHUANIA; *Crops". 2005 (ISSN 1648-0198) - statistical bulletin of Statistikos departamentas / Statistics Lithuania, published in Vilnius, Lithuania in 2005. */ calculated data

POLAND

	2000	2001	2002	2003	2004	2005	2006 Est.
Cultivated area [ha]	5100	4900	5200	3000	6345 fibre flax and 600 linseed	6843 (6000 flax & 800 linseed)	4235
Straw production [thous.t]	11.7	10.8	11.5	7.8	27	37.6	
Straw yield [t/ha]	2.75	2.56	3.10	2.53	4.25	5.5	
Long fibre yield [dt/ha]	4.5	3.5	2.9	2.8	8.0	7.2	
Short fibre yield [dt/ha]	3.1	3.3	5.2	4.1	3.5	4.6	
Total fibre production [thous.t]	3.2	2.9	3.1	2.2	7.5	8.1	
Long fibre production [t]	8777	10454	10780	23200	5000	4926	
Short fibre production [t]	4388	5226	5390	11600	3500	3147	
Percentage of dew retting [percent]	100	100	100	100	100	100	
Mill consumption of flax [t]	2321°	°6123	6880	6760			
Seed yield [t/ha]	°	°	°	0.4	0.6-0.7		
Yarn production [t] (wet + dry spinning)	1362°	°5950	6669	7400			
Production of textiles [1000 m]	4563°	3953°	4380	4500			
Flax/Hemp Export of seed [t]	°	°	°	39/1			
Flax/Hemp Export of yarn [t]	°	°	°	3800/2			
Flax/Hemp Export of fibre [t]	°	°	°	820/12			
Export of linen textiles (fabrics) [1000 m]	3241°	°2371	°2550	3100			
Export of linen fibre [t]						1355,990[1)]	
Flax Export of yarn [t]						2678,136[1)]	
Flax Import of fibre [t]	°	°	°	3790/24		3480,610[1)]	
Flax Import of yarn [t]	°	°	°	840/1		857,622[1)]	
Import of fabrics [1000 m]	°	°	°	867		528,495[1)]	
Import of seed [t]	°	°	°	3967/319			

Source: H. Smarzynski, Polish Flax Foundation, Institute of Natural Fibres, Poznan, Poland (to 1999)
[1)] estimated data; **/ in 1000m$^{2;\,1/}$ includes rural fibre produced in 1997 and 98. Data from 2000-2003 by Polish Chamber of Flax and Hemp. 2004- official data of the Agencja Restrukturyzacji i Modernizacji Rolnictwa (ARMIR)

RUSSIA

	1998	1999	2000	2001	2002	2003	2004	2005
Cultivated area [ha]	107340	104050	107610	127340	110820	118060	112300	95450[1)]
Straw yield [t/ha]	1.98	1.62	2.43	2.24	2.09	2.85	2.46	2.64[1)]
Long fibre yield [t/ha]	0.43	0.36	0.55	0.5	0.47	0.66	0.58	0.63[1)]
Long fibre production [t]	33540	23700	51170	58000	37730	55290	57790	56290[1)]
Short fibre yield [t/ha]								
Short fibre production [t]								
Percentage of dew retting [percent]								
Mill consumption of flax [t]								
Seed yield [t/ha]	0.15	0.20	0.21	0.21	0.20	0.18	0.17	0.16[1)]
Yarn production [t] (wet + dry spinning) single -thread yarn[2)]	17093	20108	19806	22012	23189	25067	26088	19176
Production of textiles [mln m^2][3)]	68,8	90,4	113	125	143	157	159	122

Source: Alexander Goncharov, Deputy Director, Department for Public and International Relations, Federal Service of State Statistics of the Russian Federation, Moscow, Russia
[1)]for 1ha harvested area; [2)]data for long fibred flax; [3)]unifilar linen yarn; [4)]linen textiles finished; [5)] data for year 2005 are preliminary.

UKRAINE

	1999	2000	2001	2002	2003	2004	2005
Cultivated area [ha]	21 900[1)]	1930[1)]	28280[1)]	28200[1)]	32480[2)]	38220[2)]	25530[2)]

Source: [1)]Prof. Dr. :I. Karpets, Agriculture Institute of Ukrainian Academy of Agrarian Sciences, Chabany, Ukraine,
[2)] Dr. Pavel Goloborod'ko, Institute of Bast Crops, Lenina 45, 245130 Glukhov, Sumy, Ukraine, Tel.: /Fax: 3805444 22643, E-mail: ibc@sm.ukrtel.net

STATISTICAL DATA ON INDUSTRIAL HEMP

HEMP HARVESTED AREA IN EUROEPAN UNION COUNTRIES AND SOME OTHER COUNTRIES

COUNTRY OF EU	1997[1)]	1998[1)]	1999[1)]	2000/2001[2)]	2002[1)]	2004 [3)]	2005 [4)] est.
Austria	938	974	289	287	277	399	353
Belgium		0	1	0	0		6
Czech Republic						150	159
Denmark		26	23	7	0	40	
Finland	53	1218	93	59	0	7	
France	10980	9682	9515	7700	7729	8800	9600
Germany	2766	3553	3993	2967	2035	1730	2005
Italy	0	255	197	151	300	885	
Ireland	23	28	22	6	0		
Latvia							6
Luxembourg	13	13	0	0	0		
Netherlands	1322	1055	872	806	2100	27	49
Portugal		770	185	4	0		
Spain	4828	19860	13473	6103	691	654	700
Sweden				0	0	141	368
UK	2293	2556	1517	2245	1413	1658	3000
Switzerland	200	250	250	250[1*]			
Total area in EU	23216	39990	30179	20404[2)]	14584[2)]		
Poland –data by CSO (Central Statistical Office of Poland)	300	78	100	111	83 In 2003– 101 ha[3)]	910	216 in 2006; 1013ha
Ukraine					970[5)]	1 510[5)]	1 940[5)]
Hungary						500	

Source: [1)] Michael Dr. Karus, nova –Institut für politische und ökologische Innovation, Nachwachsende Rohstoffe, Thielstr. 35, 50354 Hürth Germany

[2)] 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

[3)] *LEN I KONOPIE. (FLAX AND HEMP)* No 4. 2005. pp. 2-10. The Bulletin of the Polish Chamber of Flax and Hemp, office at the Institute of Natural Fibres, Poznan, Poland, Ph. : +48-61 8 455 851, fax : +48 61 8 417 830, e-mail: hempflax@inf.poznan.pl

[4)] Polish Chamber of Flax and Hemp, office at the Institute of Natural Fibres, Poznan, Poland, Ph. : +48-61 8 455 851, fax : +48 61 8 417 830, e-mail: hempflax@inf.poznan.pl

[5)] Dr. Pavel Goloborod'ko, Institute of Bast Crops, Lenina 45, 245130 Glukhov, Sumy, Ukraine, Tel.: /Fax: 3805444 22643, E-mail: ibc@sm.ukrtel.net

FLAX AND HEMP CULTIVATION IN EUROPEAN UNION COUNTRIES

The total area of flax and hemp cultivation in European Union countries, which have been officially contracted in campaign 2005/2006 is: flax 117.036 ha, hemp 14.541 ha.

PRODUCTION OF FLAX AND HEMP FIBRE IN EU COUNTRIES IN THE CAMPAIGN 2005/2006

Country	Flax Fibre [tons]	Hemp fibre [tons]
Belgium	26 547	-
Czech Rep.	4 700	300
Germany	72	3 768
Spain	-	2 047
France	178 500	18 000
Italy	35	88
Lithuania	4337	-
Latvia	1 823	-
Hungary	-	482
The Netherlands	8 412	100
Austria	213	547
Poland	2 024	233
Finland	85	-
UK	13	1 062
Total	**226 762**	**26 626**

Source: data of EC, document AGRI.C.1 of 18/05/2006 : OLK122\production et superficies 2005-06.xls

The total area of flax and hemp cultivation in European Union countries, which have been officially contracted in campaign 2004/2005 is: flax 118.251 ha, hemp 14.557 ha.

PRODUCTION OF FLAX AND HEMP FIBRE IN EU COUNTRIES IN THE CAMPAIGN 2004/2005

Country	Flax Fibre [tons]	Hemp fibre [tons]
Belgium	30 922	-
Czech Rep.	6 480	-
Germany	228	2 358
Spain	-	1 570
France	180 000	14 000
Italy	128	424
Lithuania	6348	-
Latvia	1070	-
Hungary	-	944
The Netherlands	7849	81
Austria	218	446
Poland	271	146
Finland	100	8
UK	121	1 583
Total	**233 734**	**21 152**

Source: data of EC, document AGRI.C.1 of 18/05/2006 : OLK122\production et superficies 2004-05.xls

FUTURE PLANS

2006

- November 28th to December 1st 2006. ***III Symposium on Natural Fibres, Full Use of Fibres and Textile Applications (FIBRATEX 2006),*** **as a part of 13th SCIENTIFIC CONVENTION ON ENGINEERING AND ARCHITECTURE (CCIA 2006),** CUJAE, Cuba, Havana**,** November 28th to December 1st 2006. Organizer of **FIBRATEX 2006**: El Instituto Superior Politécnico "José Antonio Echeverría" (CUJAE). Contact person: Ms. Martha Mazorra Mestre, Jefa Grupo de Tensioactivos y Emulsiones, Universidad Técnica de Energía Renovable (UTER), CUJAE. Cuba, Havana, tel.: 537-266 3633, e-mail: marta@ceter.cujae.edu.cu, conrado@ceter.cujae.edu.cu, http://www.cujae.edu.cu/eventos/fibratex/#

- December 8-9, 2006. ***Conference on Natural Fibres: Vision 2020*** organised by North India Section of Textile Institute (NISTI), New Delhi, India. Contact person: Prof. R. Chattopadhyay, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, tel : 91-11-26591412 (O), 91-11-26581977 (R), fax: - 91-11-2658-1103, e-mail: rchat@textile.iitd.ac.in and Prof. V. K. Kothari, Department of Textile Technology, Indian Institute of Technology, New Delhi -110016, India, e-mail: kothari@textile.iitd.ac.in. website: www.nisticonference.com

2007

- October 7-9, 2007. 4th GLOBAL WORKSHOP (GENERAL CONSULTATION) OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS: "Innovative technologies for comfort" University of Arad, Romania, Contact person in Romania: Dr Cecilia Sirghie, e-mail: cecilias1369@yahoo.com

2008

- July 21 to 23, 2008. Pan American Conference on Flax and other Bast Plants 2008, Saskatoon. Organized by the Saskatchewan Flax Development Commission (SaskFlax), FAO/ESCORENA European Cooperative Research Network on Flax and other Bast Plants. Topics connected with agronomy, harvesting, processing, end uses (including plastic composites, insulation, textiles, filtration, geotextiles, fuel), grading and standards. Canadian Conference Coordinator Ms. Penny Eaton, e-mail: penny@eatonassociates.ca. Contacts: Ms. Linda Braun, Executive Director, Saskatchewan Flax Development Commission (SaskFlax), A5A - 116 - 103rd Street East, Saskatoon, Saskatchewan, Canada S7N 1Y7 Telephone: (306) 664-1901; Fax: (306) 664-4404 or email saskflax@saskflax.com and Mr. Alvin Ulrich, Crop Fibers Canada, 161 Jessop Avenue, Saskatoon, Saskatchewan, Canada S7N 1Y3, Telephone: (306) 955-4506, Fax: (306) 668-0131 or email: ulricha@cropfiberscanada.ca

Future endeavours: Efforts towards creation of the e.g. European Platform for Natural Fibres or co-operate with another technology platforms, Contributing to the organization by FAO the International Year of Natural Fibres, Searching for projects - to support financially the Network activities.

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)
Secretary of the Network – Maria Mackiewicz-Talarczyk M.Sc. (Agr.)

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Web page of FAO/ESCORENA system: http://www.fao.org/world/Regional/REU/Content/Escorena/index_en.htm and http://www.inf.poznan.pl/english.php?item=030101

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