

Dear Readers,

Let me express our deep thanks to the representatives of governments, which supported the activities of our Network and ESCORENA system – European System of Cooperative Research Networks in Agriculture during the recent European Commission on Agriculture meeting under the auspices of FAO in Rome.

It is another example of the visible role in this area of sustainable development of bast fibrous raw materials.

In the last issue of the bulletin we sent you a request to discuss and comment on the very important role of technology transfer.

In the next issue we will present the shortage of our article about the efficient transfer of technology as an invitation to all of you to take part in a very broad discussion on this topic.

We are expecting your proposals and comments about the future of our activities including the next Global Workshop and group meetings.

On pages 12 and 31 you can find proposals regarding the venue of the future world conference. On behalf of the whole Network we invite you cordially to send to us not only information data, but also reports on your scientific and production activities as well. Let us turn your attention to the proposal of Dr. Piero Venturi, Faculty of Agriculture, University of Bologna, Italy to create a new Working Group, dealing with agro-technique (see his proposal repeated once again on page 5).

Looking forward to your contributions and comments.



Yours sincerely,

The Editor, Prof. Dr. Ryszard Kozłowski

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## STRUCTURE OF THE NETWORK

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

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

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## NETWORK WORKING GROUPS (WG):

*Please note!*

*A more detailed description regarding the activities of the six Working Groups was provided in all previous editions of this bulletin and is available at the Network's web page*

*<http://escorena.fao.org/>*

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Recently the Chairman of the Group Prof. S. Sharma together with Dr. Johanna Buchert of VTT Biotechnology and Food Research, Finland, proposed and co-ordinate the following project to the EU: **TEXTILE QUALITY AND BIOTECHNOLOGY – the COST Action**. The Technical Committee on “Agriculture, Food Sciences and Biotechnology”, is financing the 4 year project. Five working groups are acting to cover the key areas ranging from quality of fibre to processing of wool.

The scope of activities and news regarding this program are described on p. 17.



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## WORKING GROUP NEWS:

### THE PROPOSAL TO CREATE A NEW WORKING GROUP

#### Dear Network members,

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

These aspects are very important for fibre crops, where harvesting mechanisation is not fully developed, and are strictly connected with cultural techniques; furthermore these two factors (mechanisation and cultivation techniques) influence quality. It would be important that the entire chain until the gate of the factory should be studied homogeneously.

#### The proposed name of the Group:

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

*proposed by Dr. Piero Venturi, Faculty of Agriculture, University of Bologna, Italy*



## FLAX, HEMP AND ALLIED FIBRES IN THE WORLD

### COTTAGE PRODUCTION OF FLAX FIBRE IN SOUTH-EAST POLAND

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The flax cultivation in Southeast Poland encompasses big areas of the previous administration zones around Lublin, Krosno, Zamosc, Chelm, Tarnobrzeg.

Flax cultivation and processing in that region has got many advantages, namely: very good climatic and soil conditions, many years of flax cultivation tradition and the appropriate abilities of farmers in scope of agronomy practices and primary processing, as well as bounty of hand labour.

The flax fibre, produced with application of cottage system in farms is purchased by trade organisations, which sort and classify the fibre and sell to linen companies and export as well.

Such trade organisations are: Zrzeszenie Producentów Krajowych Włókien Naturalnych (The Union of Domestic Natural Fibres Producers) in Lublin, Trade Agency „ARMIX” in Grodki, Trade-Production-Services Company RAWEN w Grodki, etc.

The cultivated area of fibrous flax and the production of long fibres in described region are as following:

1999 – 2000 ha – 1 450 t

2000 – 4850 ha – 4 130 t

2001 – 5500 ha – 2 875 t

Fibrous flax varieties NIKE and ARTEMIDA have been cultivated in the Southeast part of Poland. The Institute of Natural Fibres in Poznan implement those varieties. The high yielding of varieties was connected and supported by complex agrotechnology of their cultivation, enabling obtaining of high yields of fibre and seeds (volume and quality).

Another cultivated varieties are older ones e.g. LAURA, WIKO, MOGILENSKI, ARIADNA, MARINA, which are classified as a group of „other varieties”.

The yield and quality of fibre obtained in Southeast region of Poland in the period 1999-2001 is presented in the table 1.

Table 1  
Volume and quality of long fibre cultivated in Southeast of Poland

Variety	Year	Cultivated area [ha]	Mean yield of long fibre [kg/ha]	Mean standardisation type of fibre [Ns]	Tonnage of obtained long fibre (production of long fibre)[t]
NIKE	1999	1 500	800	26.5	1 200
	2000	3 150	900	25.0	2 835
	2001	2 500	600	23.0	1 500
ARTEMIDA	1999	–	–	–	–
	2000	150	1 400	30.0	210
	2001	1 000	700	25.0	700
Other Varieties	1999	500	500	25.0	250
	2000	1 550	700	23.5	1 085
	2001	1 500	450	20.0	675

Cultivation and processing of fibre in that region of Poland is based on the cottage production of fibre, which are going back to the period 1918-1939, which managed to survive the collectivisation of 1950'ies, the speeded up economy development of 1989'ies, as well as the economy transformation of 1990'ies.

The significant cultivation of fibre was developed in the region, where this system of production managed not only to survive, but also to adjust flexibly to property, economy and market changes.

The farmers have to their disposal special agronomy services and the extraction of fibre from the straw in special processing mills. Such mills are equipped with the machines for harvesting of the flax straw and devices for processing of that straw, developed by the Institute of Natural Fibres. The farmers are able to take advantage of the specialised services in scope flax harvest or they could borrow and use the harvesting machines.

The farmers are provided with the possibility of processing of their own retted straw into long and short fibre.

The mills provide the farmers as well with their help in selling fibre and seeds. The service mills is formally registered economy body, subjected to certain law regulations (law of economy activities, code of trading companies etc.).

The well functioning mills should serve the area of 150 – 200 ha of flax plantations, should have communication junctions and appropriate energetic net.

The standard flax straw processing mills in Poland is equipped with the following machines and devices:

- a) agriculture machines
  - flax puller (pulling machine) TLN 1,5
  - flax combine LK-4T
  - swath deseeding machine
  - straw picker PTP-1
  - flax straw turner “URBAN”
- b) processing machines
  - 6-pair cylinder breaker
  - scutching drum MTL-2
  - dust removal system
  - tow producing unit
- c) additional equipment
  - sorting table
  - scales
  - baling press
  - seed cleaner PETKUS-SUPER K541

The amount of specialised machines is depended on the flax sowing area, the exploitation efficiency of equipment and is established individually for each mills, taking into consideration the local conditions.

The final recipients of the flax fibre are domestic and foreign spinning mills, which are interested in purchasing fibre of good quality and suitable price. The demands and expectations of spinning mills and market competition do not allow the individual farmer to enter the market directly.

The market management is served by e.g. the Union of Domestic Natural Fibres Producers in Lublin or trade agencies, which co-ordinate the fibre production and serve the domestic and foreign sale and marketing. The Union arranges contracts with farmers for the supply of flax straw. As effect of such contracts, processing and marketing, the Union managed to sell in the period of 1997 – 2000 circa 5 000 tonnes of long flax fibre for the needs of domestic textile industry and exported circa 2 500 tonnes.

Additionally the trade agency "Armix" in Grodki in 1999-2001 managed to sell 3000 tonnes of long and short flax fibre for Polish textile industry as well as sold circa 650 tonnes of long flax fibre. The trade agency RAWEN in Grodki in 1999-2001 sold on domestic market

2 000 tonnes and exported 1 500 tonnes of flax fibre.

In the nearest time, the modernisation of the primary processing of fibre as well as the enlargement of the production offer is planned, in co-operation between the INF and the Union of Domestic Natural Fibres Producers in Lublin.

Production of flax fibre and linen goods could create a niche production, which would not be in collision to the goods, produced in European Union and could allow for non conflict access of Polish linen production to the international system of job division in scope of integration of Poland with the European Union.

Acknowledgements:

The text is base on the data obtained from: Zrzeszenie Producentow Krajowych Wlokien Naturalnych, Agencja Handlowa "ARMIX" w Grodkach, Spolka Handlowo-Uslugowo-Produkcyjna "RAWEN" w Grodkach.

translated by Mrs. Maria Mackiewicz-Talarczyk

## MAIN DIRECTIONS OF SCIENTIFIC RESEARCH OF BAST CROPS GROUP IN VIR

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All Russia Research Institute of Plant Industry has the oldest collection of genetic resources of bast crops. For some of them it is also one of the biggest collections in the world (Table 1). These collections include great amount of old local folk bred varieties, collected before the Second World War, which now could be found only in our institute.

Table 1. Collections of bast crops in VIR.

Name of the crop	Botanical name	Number of species	Number of accessions
Flax	<i>Linum</i>	17	5 521
Hemp	<i>Cannabis</i>	2	507
Jute	<i>Corchorus</i>	2	160
Kenaf	<i>Hibiscus</i>	9	214
Abutilon	<i>Abutilon</i>	1	428
Other bast crops		32	226

Since the foundation of the collections in 1922, they were evaluated in different conditions for many characters. It was discovered that accessions present enormous intra-specific diversity, which gives wide opportunities to breeders and geneticists [5].

For scientific investigations of flax we have selected inbred lines from accessions having different dispose of various traits. Now this genetic collection consists of about 250 inbred lines and lines of lower generations [4].

One of the most important agronomic characters for fibre flax is earliness. In our collection we have grate amount of local varieties, originating from the Northern European part of Russia. They have short vegetative period. From these accessions many inbred lines were selected for genetic investigations and creation of donors. Genetic analyses showed that these lines have many dominant genes, controlling short phases of vegetative period: from germination to flowering and from flowering to maturity [1, 9]. By hybridisation of some early lines and further inbreeding, donors of earliness were bred [2].

Another important character is flax height. From fibre flax accessions, differing in height, inbred lines were also selected. Genetic analyses showed that some early lines have great amount of dominant genes, controlling this character [1, 9]. It was also discovered that duration of both phases of vegetative period and plants' height is controlled by different genetic systems, and all three characters could be combined in one genotype. On the bases of these results 4 donors of earliness and plants' height were created [2].

One of the most dangerous diseases of flax is rust. Among old Russian landraces several accessions with resistance to rust were found. The genetic analyses of them and traditional differentiating varieties on infection background of Russian population of *Melampsora lini* discovered one new dominant resistance gene, named Q [8]. Later 13 donors of rust resistance were bred. Genetically they are lines - analogs of commercial varieties Orshanskiy 2 and Priziev 81. They were created by multiple backcrossing of lines, selected from resistant accessions by lines of varieties. In each generation phenotypes of father varieties with rust resistance were selected. Some of them except oligogene resistance, have also horizontal one [4, 5]. On the bases of combination of two types of resistance in one genotype, the method of breeding of varieties with long scale resistance was developed [8].



Some lines of genetic collection and donors of agronomic characters have excellent fibre quality. The best sources of such quality traits as flexibility, strength, line density and number of fibre are lines selected from North Russian folk bred varieties. Some of them have transferred their characters to donors of other traits, in breeding of which they were used [3].

In genetic collection there are many lines with mutant phenotypes of colour and shape of flowers and seeds. Genetic control of these characters indicated 16 genes, controlling these traits [4, 5, 6].

To expand the genetic evaluation of lines collection, searching for DNA markers was just started. Methods of DNA extraction from seedlings and adult plants were developed. Some lines showed differences between PCR products of 3 primers.

Among other bast crops scientific work is focused mainly on hemp. The creation of hemp genetic collection was also started. The main characters included in agronomic evaluation are: earliness, seeds production, oil contents and quality (mainly contents of polyunsaturated fatty acids). Search for and creation of forms with simultaneous sexual types maturation is carried out [7].

*You are welcome to any kind of collaboration*

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## FLAX AND LINSEED IN PORTUGAL

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The National Plant Breeding Station – ENMP – is a research institution integrated in the National Institute for Agrarian Research – INIA. It is located at Elvas, in Southern Portugal, near the border with Spain, 200 km away from Lisbon.

ENMP is composed by 3 Departments: Cereals Department, Forages, Pastures and Alternative Crops Department, and Olive-growing Department.

The research aims at breeding of the new varieties, introduction and study of adaptation of new species, and the implementation of new technologies, not only on a national level but also reflecting regional requirements.

The evaluation and breeding of genetic resources of flax and linseed is performed in the Forages, Pastures and Alternative Crops Department. This work started six years ago with the repatriation of flax germplasm with Portuguese origin, provided by Dr. Nina Brutch, from the Department of Industrial Crops of Institute Vavilov in St. Petersburg.

The characterisation of a collection consisting of all available germplasm in Portuguese gene banks and exotic material from several European countries was done, along three years. The best sowing time in Portugal seems to be late autumn for Southern dry regions, and early spring for Northern wet regions. In the fourth year, several accessions well adapted, with high levels of seed and fibre yield (intermediate types) were identified, as well as specialised fibre and oil lines. Then comparative trials and crosses started, in order to select cold tolerant genotypes and best fibre quality.

This year we began to study the adaptation of hemp, for oil and fibre purposes, with the scientific support of Dr. Sergiey Grigoriev, from the same Russian institution.



## BRIEF NOTES ON THE FLAX SITUATION IN WESTERN CANADA IN 2001

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Agriculture and Agri-Food Canada has estimated the harvested area of flax in Western Canada in 2001 was 652,000 hectares; this is up somewhat from the 591,000 hectares planted in 2000 but down from the 777,000 hectares planted in 1999. Except for a few trial fields of fibre flax, all flax fields in Western Canada are planted to linseed varieties to produce seed for crushing into linseed oil. In the last three years average seed yields have declined from an average of 1.32 tonnes per hectare in 1999 to 1.17 in 2000 and 1.08 in 2001. This yield decrease is due, in large measure, to the combined effects of decreased prices for flaxseed, higher fertiliser prices and/or lower than normal precipitation. Total seed production in 2001 is estimated to be 702,000 tonnes. This is almost the same as the 693,000 tonnes produced in 2000 but considerably less than the 1,022,000 tonnes produced in 1999.

A large portion of the flax in Canada is planted in the eastern half of Saskatchewan and central and western Manitoba. In 2001, Manitoba and the eastern quarter of Saskatchewan received normal precipitation but most of the remainder of Saskatchewan experienced some of the driest weather in the last 100 years. For instance, Saskatoon, the site of one of only two flax breeding programs in Canada, received a total of 159.7 mm of precipitation during the course of the entire year compared to a normal yearly amount of 347.2 mm.

Many of the linseed varieties in research plots were only ankle high and even the tallest fibre varieties in plots near Saskatoon were only knee high. For the first time in many years, the annual research station flax field day held in the end of July was cancelled due to the poor and/or inconsistent plant stands caused by the drought.

The majority of the straw produced from Canadian linseed is still burnt or chopped and worked into fields, however, there are three larger processors and several smaller ones who salvage unretted linseed straw and turn it into tow of various degrees of cleanliness. The majority of this tow is still going to the speciality paper market but there are increased sales of cleaner grades of tow to manufacturers of plastic composites and insulation materials. Schweitzer-Mauduit, one of the existing processors, has announced plans to build a new processing facility at Carmen, Manitoba, near their existing plant at Winkler to improve the efficiency of their existing operation. Several other companies have expressed interest in building processing plants for flax straw but, to date, actual plant construction has not proceeded.

Interest in flax fibre production in Canada is increasing and Biolin Research, a flax fibre oriented company based in Saskatoon, has obtained funding to carry out a number of research projects in 2001 with both oilseed and fibre flax. These include collecting and assessing the fibre content from the straw of sixteen oilseed flax varieties grown in replicated trials at twelve sites in Saskatchewan and from the straw of three varieties grown in replicated trials at three sites using a variety of agronomic practices. To our knowledge, this type of research, using research plot material, has not been done before in Western Canada and hence it should start building a knowledge base that will help processors and farmers change their management practices in the future to improve the quantity of fibre they obtain from a given field of oilseed flax. Other projects involve further assessment of relative fibre contents in flax accessions held by the Plant Genetic Resources Canada gene bank now located in Saskatoon and work with the flax breeders in Saskatoon to develop oilseed flax varieties with elevated or lowered percentages of bast fibre.

Biolin Research has also started assessing, on a fee for service basis, the fibre content of salvaged linseed straw being used by straw processors. In the future this should help increase their profitability by decreasing the chance of them purchasing straw from fields that have below normal fibre content.



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

### HEMCORE AND HEMP BUSINESS IN THE UK

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The role of Hemcore in bast fibres as follows:

1. Hemcore is the only grower and processor of Hemp in the UK.

2. We are growing the second largest area, for a single company, in Europe behind LCDA in France. This year we grew 2225 hectares.
  3. We have a decortication factory in Essex where we process the straw from this area.
  4. The hurds or shives are marketed throughout the UK, parts of Europe and even as far as the Middle East as a horse bedding. We also supply litter for the poultry industry.
  5. Our fibre goes to a diverse range of markets including paper, automotive and insulation. We have several contracts to supply in Germany for such manufacturers as BMW.
- We commenced trading in 1993 and we consider that we now know the whole Hemp Industry in Europe very well.

### HARMONIA PROJECT

Hemcore, along with various European partners, are involved in a 50% EU funded project to commercially develop a new variety of Hemp.

The variety is called Chamaeleon as it changes colour from green to yellow prior to harvest. It appears at this stage that it has a specific advantage over the other currently commercial Industrial Hemp varieties. This is its ease of decortication. From non-retted straw it has proved to be easier to separate by mechanical means the bast fibre from the woody core.

We hope for a successful outcome to this project in that Chamaeleon becomes a real alternative Hemp variety in Europe.



### A Survey on - "The Variety, Use and Applications of Natural Fibres"



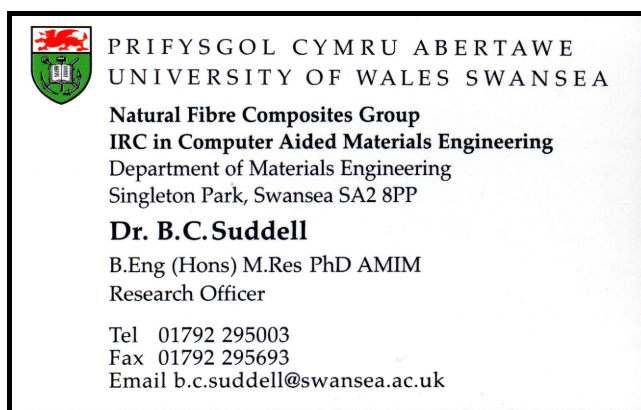
The Natural Fibre Composites Group based within the Interdisciplinary Research Centre at the University of Wales, Swansea is currently carrying out an international survey into low cost and environmentally friendly composites of Natural Origin. The principal objective is to define the use of Natural Fibres such as Hemp, Flax and other Fibres within specific areas such as the automotive and construction industries on a global scale. The survey also covers work in relation to biodegradable matrices for use with Natural Fibres.

The work is part of an international programme of collaboration between the University of New South Wales, Sydney and the Regional Research Laboratory, India. The purpose of this programme is to define engineering needs in the UK, Australia and Indian Sub-continent with regard to these particular composites.

From a construction industry viewpoint they are attractive for low cost artefacts and structures in developing nations, for example, one important aspect is structural components for easily assembled housing. From an automotive industry standpoint, more and more components are being produced using Natural Fibres with the aim of one day producing the "Biodegradable car" as has been reported in the national press recently.

This survey is looking to gauge the current situation in this area. Companies or organisations working in the area of Natural Fibres or NF composites in particular with respect to the automotive and construction industries are the people we would most like to hear from. The survey is being carried out by Dr. B. Suddell (contact details below).

The Natural Fibre Composites group are also currently seeking industrial sponsors for future programmes of research in this area and would welcome expressions of interest from interested parties.



## FLAX AMERICA, A CONNECTICUT-BASED COMPANY, HARVESTS AND MARKETS FLAX FIBER

*Mr. Charles L. Larkin, Jr. MD, Box 177 Middlebury, Connecticut 06762 USA, Tel. and fax 203-758-9108 work (W) tel. 203-758-9183 home (H), E-mail: biscoefarm@aol.com*

Flax America is a Connecticut-based company, which harvests and markets flax fiber.

Flax America owns two scutching mills, one Eastern Flax Maine LLC the other, Eastern Flax South Carolina LLC. Growing a summer crop in the North and winter crop in the South better assures a year- round fibre supply. Our long fibre flax seed is to similar cultivars of Europe where linen is the final product.

The flax fibre product of Maine, like flax fibre of France and Belgium, is also long and short. In South Carolina long fibre is scutched directly into short fibre of two to six inches. The difference in length in the South is the result of a simplification of harvest method. Each farmer "pulls and turns" when harvesting in the North but "cuts" in the South as if flax were hay! Haying is easy for many farmers. They are familiar with it.

Our long fibre from Maine is desired by Europe and China for yarns while American markets are accustomed to the short length of cotton for blends. In preparation for an increasing demand for grown fibre, farmers in five states have planted small test plots of flax. The several farmers, having seeded in the fall of 2001, are testing to find if their area can sustain flax as a "winter crop". Their "test crop" harvests will be in April or May.

Grown natural farm fibres have a combination of strength, flexibility and could have a cost advantage over some man made fibers.

Uses of farm grown fiber: **mats** – (erosion control – seeding – gardening) – **fiber blends** – (interiors) – **rugs** (pads or backing) – **composites** – (the automotive is just one example) – **non-wovens** – **paper** of superior strength (bible paper – cigarette paper).

Grown farm fiber is biodegradable. Flax fibers are flexible and can be surprisingly strong. Flax grows to an ideal and manageable height of four feet. Flax America seeks to increase farm income with additional crops. Flax America has an interest in the medical uses of flax seed and lignans.

Flax America expects to support conservation, preservation and recycling.

The divisions of Flax America intend to support one or more of the above when appropriate.



The bale of scutched flax in South Caroline, USA

## PRINCIPLES TO SUCCESS: A CRITICAL THRESHOLD OF COMPETENCIES

*Mr. Erwin Lloyd, Bellingham, WA, USA*

When considering bast fibre processing developments in North America, in a number of respects, these ventures can be reminiscent of life in America's 19<sup>th</sup> century Old West. As such, the pursuits are often rough and wild. Processing and market opportunities seem to offer the potential for great riches – yet most participants face significant struggles. Nevertheless, entrepreneurs generally savor the pioneering opportunities.

Many entrepreneurs attempt entry, but frequently fail due to unforeseen obstacles. Occasionally, larger companies pursue bast fibre ventures as well. Having more solid support and access to better resources, these ventures are more likely to succeed. Nevertheless, even these better-endowed ventures face substantial challenges.

Through continued observation of such ventures, an underlying principal is noted. *A critical threshold of competencies is very important to yield success. These competencies are strong technical and processing knowledge, powerful market development and sufficient financial strength for both project and contingency costs.*

Incorporating these principles, BioComposite Solutions is a consulting firm focused to assist developers in the emerging bast fibre industry. Based in Bellingham, Washington, USA and originating from an engineering background, this consulting firm specializes in technology, engineering, business, and marketing for natural fibre-based and related industrial materials, particularly composite applications. Throughout the past seven years Erwin Lloyd, the Managing Director, and his associates have conducted a broad range of engineering, research, business, technical and marketing assessment efforts for large, small, and start-up processors, machinery manufacturers, binder suppliers and governments across the United States, Canada, as well as overseas.

From this background, a development arm, Acadia BioComposites, Inc., has been organized utilizing internally developed proprietary technology to develop a range of target products of moderate to high value. At the heart of this technological effort is the pursuit of the optimal utilization of bast fibre crops to then accentuate the inherent characteristics of these natural fibres. Acadia BioComposites integrates: 1) The development of select bast fibre crops showing the greatest value in terms of engineered and commercial performance relative to costs. 2) The utilization of select equipment that enables large quantities of end product to be efficiently produced at relatively low unit processing costs. 3) Select fibre processing techniques that further optimize end value. 4) The unique combination of materials, processing, technology, and business and market development that result in strong margins and ROI.

*For additional information on either of these two companies, you are welcome to contact Erwin Lloyd, 1005 Kelley Ridge Ct., Bellingham, WA, USA 98226-2200. Tel: 1-360-734-4240, E-mail: acadia@attbi.com*



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

### PROPOSALS FOR THE NEXT GLOBAL WORKSHOP

We feel that it is high time to discuss the proposals to host the next Global Workshop.

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

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

### NEXT CONFERENCE PROPOSALS

1. Flax workshop of the FAO European Cooperative Research Network on Flax and Other Bast Plants connected with the 60<sup>th</sup> anniversary of AGRITEC Ltd. company (1942 – 2002)

„Mapping of European germplasm for International Flax Data Base creation, use in breeding for different flax and linseed varieties“, Sumperk, Czech Republic, September 17 – 20, 2002

The call for papers- the first circular available from the Institute of Natural Fibres – the Co-ordination Centre of the Network (E-mail: netflax@inf.poznan.pl) or from AGRITEC (E-mail: pavelek@agritec.cz).

2. International Conference „Production, Processing and Utilization of Natural Fibres“ on September 10 and 11, 2002 in Potsdam. Contact person: INSTITUT FÜR AGRARTECHNIK BORNIM e.V. (ATB), Tel: ++49(0)331/5699-310

Max-Eyth-Allee 100, D-14469 Potsdam, Germany, Fax:++49(0)331/5699-849, E-mail: cfuerll@atb-potsdam.de, Internet: <http://www.atb-potsdam.de>

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

As we mentioned in the report on the Global Workshop, it was proposed during this event in Bulgaria, that we intend to continue our Open Competition but this time modified. The Network coordination center proposed that the most interesting papers or posters presented during our network meetings and conferences would enter the competition.

The special jury will judge all papers and posters presented during the year, i.e. during the conferences in Bulgaria and China and we will let you know the results in due course.

All Network members are cordially invited to participate in the competition to be continued the next year.



## SOURCES OF INFORMATION

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

- a. <http://escorena.fao.org/> [ESCORENA, FAO, Rome -Network website]
- b. <http://iwn.inf.poznan.pl> [Institute of Natural Fibres, Poznan, Poland]
- c. <http://www.csl.gov.uk/ienica> [IENICA - Interactive European Network for Industrial Crops and their Applications in the Changing Millennium]
- d. websites of the Network Chairmen:
  - <http://www.agritec.cz> [Martin Pavelek, AGRITEC, Sumperk, the Czech Republic]
  - <http://www.fh-reutlingen.de> [Martin Tubach, Institut für Angewandte Forschung (IAF), Reutlingen, Germany]
  - <http://www.qub.ac.uk> [Shekhar Sharma, The Queen's University of Belfast, UK]
  - <http://www.univ-rouen.fr> [Claudine Morvan, Université de Rouen, France]

### Sources of Statistical Data:

<http://apps.fao.org> [FAOSTAT Database Results], <http://www.texdata.com>, <http://www.its-publishing.com>, [www.naturfaser-wirtschaft.de](http://www.naturfaser-wirtschaft.de)

### Possibilities of cooperation with other Networks on Industrial Crops

1. **INFORM\_IENICA** – Industry Network for Renewable Resources and Materials – Interactive European Network for Industrial Crops and their Applications in the new Millennium. Coordinator of IENICA: Mr. Melvyn F. Askew, Ministry of Agriculture, Central Science Laboratory at York CSL/MAFF, SAND HUTTON, YORK, UK YO4 1LZ, tel. 44-1904-462309; fax: 44-1904-462256, E-mail: [m.askew@csl.gov.uk](mailto:m.askew@csl.gov.uk), For more data see <http://www.csl.gov.uk/ienica>  
Coordinatoor of INFORM: Dr. Nigel Oliver, Operations Director, ACTIN, Pira House, Randalls Road, Leatherhead, Surrey KT22 7RU, UK, Tel: +44/1372 802054, Fax: +44/1372 802245, E-mail: [info@actin.co.uk](mailto:info@actin.co.uk), Website:<http://www.actin.co.uk>
2. **Flax Council in Canada**; The Council is based in Winnipeg, with Mr. Donald H. Frith as President. 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](mailto:flax@flaxcouncil.ca)
3. **Canadian Industrial Hemp Network (CIHN)** – information on the internet: <http://www.interlog.com/~ihn>

### 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](http://www.naturfaser-wirtschaft.de)
- [www.hemp.co.uk](http://www.hemp.co.uk) regarding Hemp Food Industries Association Contact person: Mr. Paul Beinham, E-mail: [paul@hemp.co.uk](mailto:paul@hemp.co.uk)



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

The European Cooperative Research Network on Flax and other Bast Plants establishes links with the Cotton Network, intending to share and compare the achievements in scope of e.g. bioprocessing of fibres and materials.

The close cooperation of the Coordination Centre with the FAO Intergovernmental Group on Jute, Kenaf and Allied Fibres as well as the Intergovernmental Group on Hard Fibres resulted in the continuous participation of the Network Coordinator in

the meetings of these Groups as well as in co-organization and hosting of the FAO Intersessional Consultation on Fibres by the Institute of Natural Fibres (15-16.11.1999).

**The Network's members and the Coordination Centre are active in the co-operation and work within the following EU projects:**

- **COST Action 847: Textile Quality and Biotechnology** (within *COST- European Co-operation in the Field of Scientific and Technical Research*). The Network's scientists are active in the work of two Working Groups: WG/1 "Quality assessment of natural fibres" (chaired by S. Sharma) and WG/2 "Bioprocessing of Bast Fibres" (chaired by R. Kozłowski). They are contributing to establishing unified quality assessment of bast fibres in Europe as well as to develop environmentally friendly production technologies for textile industry by using enzymatic processes.
- **COST Action 628. Life Cycle Assessment of Textile Products, Eco-Efficiency and Definition of Best Available Technology (BAT) of Textile Processing.** Program, served by the EU, in scope of COST system. The duration: 4 years, from 9 November 2000 to November 2004. The experts from the following 12 countries are participating in the program: Belgium, Czech Republic, Finland, France, Germany, Greece, Poland, Rumania, Spain, Sweden, Switzerland and UK. COST Action aims in reinforcing of co-operation between all current and future European Research joint with ecology in textile industry. The multidisciplinary character of the research is necessary to achieve the success; the experts are chosen from diversified organizations joint with textile technology and chemistry, environmental protection and so called *eco-labelling*. The following three Working Groups act within the COST Action 628:
  - WG/1 Life Cycle Assessment (LCAs) on the textile products chain  
Chairmen: Dr. Marion Tobler-Rohr - Switzerland, Dr. John Binkley – UK
  - WG/2 Dematerialization of the textile products chain  
Chairman: Prof. Christopher Koroneos, Greece
  - WG/3 Eco-efficiency indicators and Best Available Technology (BAT) definition  
Chairmen: Prof. Heinrich Planck – Germany, Mr. Bob van der Beke – Belgium  
The Management Committees took part on 12 March at the EU, Brussels, Belgium; 2<sup>nd</sup> MC together with Working Groups' meeting took part on 18 and 19 October 2001 in Thessaloniki, Greece. The following MC Meeting combined with WG meetings is expected to be held on 25<sup>th</sup>-27<sup>th</sup> April 2002 at the Universidad Politecnica di Cataluna in Barcelona, Spain.
- **INFORM-IENICA project** [Contract No QLK5-2000-00111]: the European Commission supports 3 year project, started on 22 April 2001, during the Inaugural Meeting at Central Science Laboratory (CSL) in York, UK. IENICA is the Interactive European Network for Industrial Crops and their Applications in the Changing Millennium. Coordinator: Mr. Melvyn F. Askew, Ministry of Agriculture, Central Science Laboratory at York CSL/MAFF, SAND HUTTON, YORK, UK YO4 1LZ, tel. 44-1904-462309; fax: 44-1904-462256, E-mail: m.askew@csl.gov.uk, <http://www.csl.gov.uk/ienica>).

**INFORM** is an Industry Network for Renewable Resources and Materials. The activities are coordinated by Dr. Nigel Oliver and Mr. Ian Bartle, Alternative Crops Technology Interactive Network Limited (ACTIN Ltd), PIRA House KT22 7RU, Leatherhead, UNITED KINGDOM.

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

## CONFERENCES:

Let's turn our attention to the conferences organized within the INFORM-IENICA project, namely:

**A/ International Conference "Industrial Applications of Bioplastics"**, York, United Kingdom, took part on 3, 4 & 5 February 2002, organised by Europoint b.v. by order of IENICA-INFORM. It was the second edition of the "Industrial Applications of Bioplastics" conference is a follow-up of the conference organised by Europoint in Bonn, Germany in 1999.

**The target groups of the conference are:**

1. The Bioplastics chain, from feedstock producers, research, raw material producers, processors, end-users to authorities and consumers organisations
2. All (synthetic) plastic processor industry and end-users which want to make acquaintance with the potential of Bioplastic materials.

## B/ IENICA Green-Tech conference (in The Netherlands, 2002)

Dear members of IENICA,

During the meeting at York I informed you that the next IENICA Green-Tech conference (in The Netherlands, 2002) will be combined with the "Industrial Crops Conference" organized by Elsevier. Both conferences deal with the non-food application of crops in a broad context. By combining the two conferences we expect the following advantages: a) more efficient advertisement of the conferences; b) avoid overlap between the two conferences; c) reduce the attendance costs for the delegates and d) a larger attendance of the conference by targeting the event to both groups of delegates. However, in

order to maintain the character of both events, the organizers must find a way to effectively combine the “applied character” of the Green-Tech conference with the “research character” of the “Industrial Crops Conference”. This, within the two and a half days, which each conference used to take in the past. So I am asking your collaboration to get the best congress set-up.

The two precedent Green-Tech conferences presented separated Sections for each group of non-food crop applications (Biofuels, Bioplastics, Lubricants, etc). Most sections were held parallel and a few as plenary sections. In the last Green-Tech there was a half-day reserved for discussion.

The same set-up was chosen for the last Industrial Crops conference in Bonn in 1999. There were no parallel sections and there was a large number of posters presented during the conference.

The question is thus: how to present both fundamental and applied papers in a coherent program with enough “depth” to satisfy the target group of Green-Tech and Industrial Crops within two and a half days? Let me know what you think. To help to initiate the discussion I write down a few possibilities.

Conference should maintain:

- The high scientific standards of the presented papers,
- The inclusion of papers on the market application of non-food products, important regulations and policies,
- Significant time for discussion.

How to schedule it?

1. Plenary section on policy and regulations; classic division of the sections into the main application groups. Enlarge the section to harbor both more fundamental and more application papers. These sections must be parallel then.
2. Classic division of sections into the main application groups plus policy. All sections are plenary and containing only papers on applications.

Fundamental papers only as posters. Time on the program for discussions at the poster sites.

3. Classic division of sections into the main application groups plus policy. All sections are plenary and containing only papers on research.

Applications only as posters and trade show. Time on the program for discussions at the trade-show sites.

4. Sections on the subjects, which interest all applications such as policy, regulations, quality, marketing drive etc. All research and application papers as poster and show. Time on the program for discussions at the trade-show sites.

For more information about the conference programme contact:

Mrs. T. Lopes, PhD, Programme manager, tel: +31 (0)71 5231 391, fax: +31 (0)71 5231 386,  
E-mail: lopes@biotop.demon.nl



## LETTERS TO THE EDITOR

### Letters from the readers

*From: "Suddell B.C" b.c.suddell@Swansea.ac.uk, To: 'Maria Mackiewicz-Talarczyk' netflax@inf.poznan.pl  
Date: Mon, 1 Oct 2001 12:16:22 +0100 X-Mailer: Internet Mail Service (5.5.2653.19)*

Dear Professor Kozlowski and Maria,

Many Thanks again for such a useful conference in Shenyang China. I found the information very applicable and very interesting but most importantly i have met many very nice people who i shall remain in contact with and hopefully work more closely with in the near future.

Kind Regards

*Brett Suddell, Dr. B. C. Suddell Beng (Hons) MRes AMIM PhD, Senior Research Assistant, Interdisciplinary Research Centre, Department of Materials Engineering, University of Wales, Swansea, Singleton Park, Swansea SA2 8PP, tel.: +44 (0)1792 295003, Fax: +44 (0)1792 295693, E-mail: b.c.suddell@Swansea.ac.uk*



## SPECIAL STUDIES, NEWS, FORUM OF THE DISCUSSION

*Letter from W.J. (Bill) Baxter , Feasibility Analysis Program Lead , OMAFRA, 1 Stone Road West, Guelph, ON Canada N1G 4Y2 , Telephone: (519) 826-3281, Toll Free: 1-888-466-2372, Facsimile: (519) 826-3259,  
Email: bill.baxter@omafra.gov.on.ca , OMAFRA Website: http://www.gov.on.ca/omafra*



I am writing on behalf of the Canadian Hemp industry and the potential fibre flax industry in Ontario Canada. For years now, Growers in Ontario Canada have been struggling to commercialize industrial Hemp. In spite of some excellent R&D, the lack of capital and the inability to establish a high speed fibre separation line has hampered commercial development of the industry.

In addition, we have recently begun to study fibre flax as an industrial crop. The two main markets would seem to be Europe and China. Market access seems good for both, but we lack the surety of markets to make investment in a serious industry.

I am writing to see if your network contacts are interested in helping to establish a viable commercial hemp and/or flax processing industry in Ontario, Canada. We have the growing capacity and the knowledge to supply such an industry, but we need help with the markets and the processing technology. With a good business plan, I am confident that investments will not be hard to find.

I look forward to a discussion with yourself or other members of the Network.

## 2. CANADIAN HEMP CORP, A British Columbia registered Company

*Mr. Rick Plotnikoff, Canadian Corporate Office, 9175 Mainwaring Rd. Sidney, BC, Canada, V8L 1J9, Ph: 250-656-7233  
Fax: 250-656-8860, <http://www.hempcorp.com> Email: [info@hempcorp.com](mailto:info@hempcorp.com)*

We would like to give you the latest information on Canadian Hemp Corp. Our interest is high on the bast fibers. Do you have a market as yet, or is it in R&D right now.

We hope that you will have a look at all the benefits of hemp and how we can pioneer this exciting industry together.

**We will be the first company in Canada to go Public in this industry.** We have already stated preparing the filing for the Nasdaq OTC.

This new crop helps the environment and offers good returns.

After a 60 year ban on Industrial Hemp the Federal government has finally allowed farmers to grow hemp in Canada. Imagine a crop more versatile than the soybean, the cotton plant, and the Douglas fir tree combined; A crop whose products are interchangeable with those from timber or petroleum; A crop that grows like Jack's beanstalk with minimal tending!

This crop; industrial hemp, which has more than 25,000 uses. Most hemp-derived products are NONTOXIC, BIODEGRADABLE, and RENEWABLE!

We are very excited about the future because we can help with saving the forests, reducing land fills, smog and many other environmental concerns. NO other industry has farmers, activists, environmentalists and big business all on one side.

Some compare hemp to the soy and ginseng industry when they started years ago. Hemp has many more uses and one major advantage, the U.S. can NOT grow hemp, but they can import all of our Canadian hemp products. For once Canada has the monopoly over the U.S. We feel we have a three-five year head start over the U.S. and this is a very big advantage.

In conclusion:

We have found that investors are looking for green companies without losing on returns, Canadian Hemp Corp is that company.

We look forward to the further exchange of ideas and new contacts.

Sincerely,

Rick Plotnikoff, *National Director*

## Industrial hemp project in South Africa

*Mr. Lulama C. Maya, Project Manager, National Hemp Foundation, Contact: CAROL-ANN Pearce:  
E-mail: [CAROL\\_AN@DOHNE1.AGRIC.ZA](mailto:CAROL_AN@DOHNE1.AGRIC.ZA)*

South Africa is conducting research on the adaptability of industrial hemp. The Chairman presented a paper entitled "Industrial hemp development in South Africa. A case study of the Eastern Cape" in the international conference on bast fibrous plants held in Shengyang City on the 18-22 September 2001.

One of the biggest challenges facing the National Hemp Foundation is the acquisition of seed at reasonable prices. The seed is presently obtained through middlemen who naturally add their mark-up.

Can you assist by providing contact addresses of seed sellers to enable the National Hemp Foundation to deal directly with them?

Your quick response will be appreciated to enable the Foundation to have ordered the seed by June for planting in September/October.

## NEWS ABOUT THE EUROPEAN PROJECTS WITH INVOLVEMENT OF NETWORK MEMBERS

### COST ACTION 847 “Textile Quality and Biotechnology “

COST = European Co-operation in the Field of Scientific and Technical Research. COST is a European program, served by the European Union in Brussels.

**17 Countries participating:** Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Lithuania, The Netherlands, Poland, Portugal, Romania, Spain, and United Kingdom

**The period:** from June 15, 2000 to June 14, 2004

**The basic document:** Memorandum of Understanding: MoU 245/00

**Chairperson:** Dr. Johanna BUCHERT, VTT Biotechnology, Tietotie 2, P.O. Box 1500, Espoo, Finland, tel: + 358 456 5146, fax: + 358 94552103, E-mail: johanna.buchert@vtt.fi, <http://www.vtt.fi/bel>

**Vice- Chairperson:** Prof. Dr. Shekhar Sharma, The Queen's University of Belfast, Department of Applied Science, Faculty of Agriculture & Food Science, Newforge Lane. Belfast BT9 5PX, N. Ireland, tel.: +44/ 1232 250 666, fax: +44/1232 668375, E-mail: Shekhar.Sharma@dani.gov.uk

**The managing body: Management Committee (MC);** First MC meeting: Brussels, July 6-7, 2000; Second MC meeting (MCM): Espoo, October 13, 2000, Third MCM in Bucharest, Romania on 20 April 2001, Fourth MCM on Madeira, Portugal, October 2001. The next MCM – 17.05.2002 in Barcelona, Spain

**Action Web site:** <http://www.vtt.fi/bel/cost847>

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

The **secondary objectives** of the Action are the following:

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

#### The structure of the Action:

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

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

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

##### 1. Quality assessment of textile materials

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

##### 2. Bioprocessing of bast fibres

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

##### 3. Bioprocessing of cellulosic fibres

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

##### 4. Bioprocessing of protein fibres

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

#### 5. Biotreatment of effluents

- 5.1. Microbial and enzymatic degradation of textile dyes
- 5.2. Treatment of bleaching effluents with catalases
- 5.3. Aerobic and anaerobic biotreatment of textile effluents

### COST 847 Textile Quality and Biotechnology

#### *The latest news regarding the COST action 847 activities*

The Management Committee (MC) of this Action took part on 3.10.2001 in Funchal on Madeira Island, Portugal in direct conjunction with the 1<sup>st</sup> Annual Workshop – the conference of the Action held on 4-6 October 2001 at the same venue.

**Participants:** J. Buchert, Finland, chair-person, S. Sharma, UK, vice chair-person

M. Hughes, UK; P. Nousiainen, Finland; A. Cavaco-Paulo, Portugal; J. Morgado, Portugal; R. Kozłowski, Poland; H. Struszczyk, Poland; E. Heine, Germany; R. Kessler, Germany; E. Csiszár Hungary; G. Szakacs, Hungary; A. Popescu, Romania; Z. Jankauskiene, Lithuania; H. Lenting, Netherlands; M. Toonen, Netherlands; J. van Dam, Netherlands; H. Feitkenburer, Switzerland; G. Gübitz, Austria; A. Riva, Spain; M.R. Julia, Spain; P. Kiekens, Belgium; A. Kalantzis, Greece; J. Marek, Czech Rep.; V. Antonov, Czech Rep.; G. Ciardelli, Italy; R. Mulder, EU.

It was assumed that the following new countries have signed the Memorandum of Understanding (MoU) and joined the Action: Lithuania, Denmark, Bulgaria, Greece, Czech Republic and Ireland.

The MC approved the joining of Turkey, Yugoslavia, Estonia, Switzerland and Slovakia to the Action. These countries have to sign the MoU before being able to join. Discussions with Sweden have been started.

The activities and future plans of all Working Groups were presented by Group leaders. The MC accepted the proposal to create a new, fifth Working Group WG/5, devoted to Biotreatment of effluents, which will have its kick-off-meeting in Ghent in February 2002.

It was decided that the 2<sup>nd</sup> Annual Workshop of COST Action 847: Textile Quality and Biotechnology will be held in Como Italy, on 9-11.10.2002 (focused on industrial and educational aspects to the textile industry). It would be the international conference, accessible for all experts interested in natural fibre quality, bioprocessing and biotreatment of effluents.

#### **The tentative topics of the sessions are:**

- session 1: Redox Enzymes
- session 2: Environment,
- session 3: Quality control
- session 4: Industrial Applications
- session 5: General-Fibres. Each session with 4 invited lectures and plus posters.

The conference in Como is open to everyone, but the invited speakers will be chosen by the Action co-ordinators and WG chairmen (external or among the COST Action 847 members). All the rest experts can submit posters.

It is worth stressing, that Short Terms Scientific Missions (STSM) are available for experts of the institutes active in the action. Several applicable STSM already took part and the reports are submitted.

It was underlined that all valuable information related to COST Action 847 is continuously included in the web site <http://www.vtt.fi/bel/cost847>

It is important to present activities of related networks including the FAO European Cooperative Research Network on Flax and Other Bast Plants, and links to their www-pages (to be added to the Action internet-site).



## NEWS REGARDING PUBLICATIONS ON NATURAL FIBRES

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

#### **NATURAL FIBRES – WLOKNA NATURALNE”**

A publication that is probably the only one in the world which contains scientific publications regarding natural fibres (an English-Polish version yearbook), edited by the Institute of Natural Fibres – Coordination Centre of the FAO Network. The publication is advised by the international team of Honorary Editors: Mr. A.M. Allam/Egypt, Mr. P. Atamanczyk/ Germany, Mr. J. Boyazoglu/Italy, Mr. A. Bozzini/Italy, Mr. A. Calus/Belgium, Mr. D. Cremaschi/Italy, Mr. C. Cullis/USA, Mr. A. Daenekindt/Belgium, Ms. U. Kechaiga/Greece, Mr. R. Kessler/Germany, Mr. J. Lappage/New Zealand, Mr. B. Mac/ Poland, Mr. G. Mackie/Northern Ireland, Mr. A.N. Marchenkov/Russia, Mr. A. Martawijaya/Indonesia, Mr. F. Matsubara/

Japan, Mr. T. Matsuo/Japan, Mr. A. McHughen/Canada, Ms. C. Morvan/France, Mr. M. Okamoto/Japan, Mr. L. Raghavan/India, Mr. R. R. Ruiz/Mexico, Mr. J.P. Trouvé/France, Mr. M. Weltrowski/Canada, and Mr. V.V. Zhivetin/Russia.

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

#### EUROFLAX Newsletter

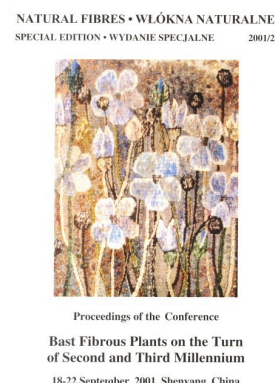
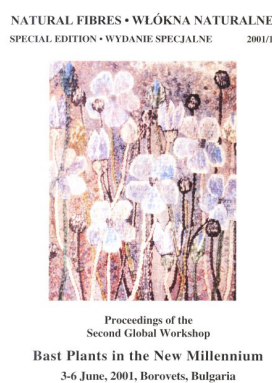
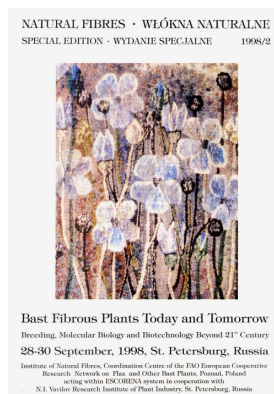
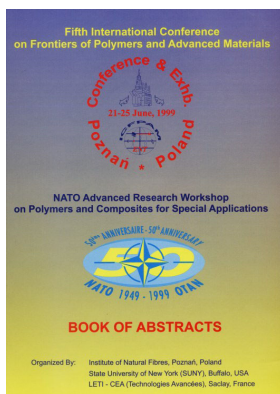
**Information Bulletin EUROFLAX Newsletter – 16 issues since 1994** (400 printed copies, reaches subscribers and Network members in 51 countries), available from the Institute of Natural Fibres, Wojska Polskiego 71b, 60-630 Poznań, Poland, fax: +48 61 8 417 830, E-mail: boint@inf.poznan.pl.

#### PROCEEDINGS of the European Regional Workshops on Flax:

- “**FLAX IN EUROPE**”, Production and Processing, Poznań, 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, Zemědělská 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)

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

- The First Flax Genetic Resources Workshop, Poznań, 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, Poznań, Poland
- Modern Flax Processing – The First Workshop of the Extraction and Processing Working Group, 15-16 March 1995, INF, Poznań, 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, Poznań, Poland
- Newsletter of the ad Hoc Research Group (the Group acted from 1989 to June 1993) – 9 issues
- Proceedings of the Hemp, Flax and Other Bast Fibrous Plants Production, Technology and Ecology Symposium, 24-25 September 1998, Poznań, 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, Poznań, 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, Poznań, 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, Poznań, Poland
- The Natural Fibres. Włókna 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, Poznań, Poland
- Proceedings of the Second Global Workshop. Bast Plants in the New Millennium, 3-6 June, 2001, Borovets, Bulgaria
- Proceedings of the Conference Bast Fibrous Plants at the Turn of Second and Third Millennium, 18-22 September, 2001, Shenyang, China



### Examples of the Proceedings

## OTHER RELATED PUBLICATIONS

### Industrial Crops

- Newsletter of IENICA – The Interactive European Network for Industrial Crops and their Application, available at: <http://www.csl.gov.uk/ienica>
- 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>)

### Hemp

- Journal of Industrial Hemp – the journal of the IHA (E-mail: [iha@euronet.nl](mailto: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](mailto: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](mailto: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](mailto:john@hemptech.com)], HEMPTECH, (707) 823-2800, [www.hemptech.com](http://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](mailto: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
- Journal of the International Hemp Association, Postbus 75007, 1070AA Amsterdam, The Netherlands. Tel/fax: +31 (0)20 618-8758, E-mail: [iha@euronet.nl](mailto:iha@euronet.nl)
- THE HEMP COMMERCE & FARMING REPORT, (c) 1999 AHM, ARTHUR HANKS. Contact at the E-mail address: [jfreeman@ssm.net](mailto:jfreeman@ssm.net), <http://www.hempreport.com>
- John E. Dvorak, E-mail: [boston.hemp@pobox.com](mailto: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](http://www.dejanews.com/home_ps.shtml)
- [www.maff.gov.uk/farm/acu/acu.htm](http://www.maff.gov.uk/farm/acu/acu.htm) -there are several good papers related to utilization of natural fibres on the UK MAFF web site
- H. Burczyk: Hemp Cultivated for Seeds- The Manual for Hemp Farmers (available at the Institute of Natural Fibres, Poznań, Poland)

## INFORMATION ABOUT INTERNATIONAL CONFERENCES ON NATURAL FIBRES

### Meetings and Conferences in 2002

- April 24 – 26, 2002. **Green-Tech® 2002 - 3rd International Congress & Trade Show with 5th European Symposium Industrial Crops & Products.** The congress will take place at the Floriade, World Horticultural Show, on a site near Amsterdam and Schiphol Airport, the Netherlands. The Floriade is held every 10 years and is the biggest horticultural show in the world. The show will cover 65 hectares with pavilions from over 25 countries. Of course all participants to

the congress will have free access to this happening. (for more details see <http://www.europoint-bv.com/events/greentech2002> ).

- June 4-8, 2002. **7th World Conference on Biodegradable Polymers and Plastics**. Grand Hotel Continental, Tirrenia (Pisa), Italy, Contact: Prof. Emo Chiellini, Department of Chemistry & Industrial Chemistry, University of Pisa, Via Risorgimento 35, 56126 PISA (Italy), tel: +39.050.918299, fax: +39.050.28438; e-mail: chlmeo@dccl.unipi.it
- May 27-30, 2002. International Scientific and Technical Conference **Modern High Technologies and Novelty Materials in Textile and Light Industries** (Progress-2002) and V International Scientific and Practical Workshop "Physics of Fibrous Materials", Ivanovo, Russia, see <http://education.ivanovo.ru/IGTA/Progress2001.htm>
- June, 17-21, 2002. **12th European Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection**, Amsterdam RAI International Exhibition and Congress Centre, The Netherlands. For information Contact: ETA – Florence, BIOMASS CONFERENCE 2002, Piazz Savonarola, 10, I-50132 Florence, ITALY, tel: + 39 055 500 21 74, fax: + 39 055 57 34 25, e-mail: biomass.conf@etaflorence.it
- July 1-3, 2002. **World Textile Conference. 2<sup>nd</sup> AUTEX Conference. Textile Engineering at the dawn of a new millennium: an exciting challenge**. Crowne Plaza Hotel, Bruges, Belgium. Contact person: E-mail: Sylvie.Bauwens@rug.ac.be, tel: +32-9-264.57.50, fax: +32-9-264.58.46, <http://textiles.rug.ac.be/conference>
- September 8-13, 2002. **The Second International Conference on Sustainable Agriculture for Food, Energy and Industry**, Institute of Botany, Chinese Academy of Sciences, Beijing, China.
- September 10 and 11, 2002. **International Conference „Production, Processing and Utilisation of Natural Fibres“** in Potsdam, Germany. Event organised by Agricultural Engineering Bornim. Contact: Prof. Dr.-Ing. habil. Chr. Füll, INSTITUT FÜR AGRARTECHNIK BORNIM e.V. (ATB), Max-Eyth-Allee 100, D-14469 Potsdam, Germany, Tel:++49(0)331/5699-310, Fax:++49(0)331/5699-849, Internet: <http://www.atb-potsdam.de> Email: cfuerrl@atb-potsdam.de
- September 17 – 20, 2002, Flax workshop of the FAO European Cooperative Research Network on Flax and Other Bast Plants connected with the 60<sup>th</sup> anniversary of AGRITEC Ltd. company (1942 – 2002). **Mapping of European germplasm for International Flax Data Base creation, use in breeding for different flax and linseed varieties**, Sumpark, the Czech Republic.
- September 30 to Oct 02. **Polydays 2002**, organised by the „Berlin-Brandenburgische Verband für Polymerforschung“ cordially invites all scientists in the field of Polymer Science to take part in the meeting in Berlin. You will find more detailed information regarding this conference at <http://www.polydays2002.tu-berlin.de>.
- October 6 to 9, 2002. **The International Textile, Clothing&Design Conference**, , the Faculty of Textile Technology, University of Zagreb, Dubrovnik, Croatia. Contact person: Prof. Zvonko Dragcevic: E-mail: [zvonko.dragcevic@zagreb.tekstil.hr](mailto:zvonko.dragcevic@zagreb.tekstil.hr), <http://www.itcdc2002.hinet.hr/>

### Conferences on composites

- ♦ 30 June – 4 July 2002. **MODEST 2002. 2<sup>nd</sup> International conference on Polymer Modification, Degradation and Stabilisation.**, Budapest, Hungary. Contact: E-mail: [modest@mail.bme.hu](mailto:modest@mail.bme.hu), <http://www.bme.hu/modest>
- ♦ July 1-6, 2002. **Ninth International Conference On Composites Engineering, ICCE/9** San Diego, USA. Contact: Prof. Dr. David Hui, USA, E-mail: [dhui@uno.edu](mailto:dhui@uno.edu), <http://www.uno.edu/~engr/composite>
- ♦ **Fourth International Symposium on Natural Polymers and Composites – ISNaPol 20002** to be held at Hotel Fazenda Fonte Colina Verde, São Pedro, SP, Brazil from September 1 to 4, 2002. The instructions for authors and other information will be at the homepage <http://www.cnpdia.embrapa.br/ISNAPOL2002.html>

#### SUMMARY OF IMPORTANT DEADLINES:

Paper Submission: April 10, 2002; Acceptance notification: May 30, 2002; Early registration: before June 30, 2002;

For more information: E-mail: [isnapol2002@terra.com.br](mailto:isnapol2002@terra.com.br), Exposition details: [alcidesleao@fca.unesp.br](mailto:alcidesleao@fca.unesp.br)

Hotel homepage: <http://www.hotelcolinaverde.com.br> , Hotel email: [eventos@hotelcolinaverde.com.br](mailto:eventos@hotelcolinaverde.com.br) , Adventure and Ecological tours: [www.grade6.com.br](http://www.grade6.com.br), Transportation: [isnapol2002@terra.com.br](mailto:isnapol2002@terra.com.br)



## STATISTICAL DATA ON FLAX

### FLAX CULTIVATED AREA [ha]

#### Fiber Flax

	1996**	1997	1998	1999	1999 [acres]	2000	2001
AUSTRIA	1105*	*700	*635	*350	865	*450	*130
BELARUS	78500°	73600	80000	***70000	172977	81800	
BELGIUM	11188	11654*	**11211	**12176	30024	****13355	****16990
BULGARIA	300	200	***58	***58	143	300	210
CHINA	***94320	***101000	***101000	***101000	249,581		
CZECH REPUBLIC	7300	2155	4117	6348	15,687	6302-linseed; 2240-fibre flax	7095
DENMARK	200	*57	*44	11	27	*45	*19
EGYPT**	9676	8714	14000	14500	25,831		
ESTONIA	°	200	***323	115		240	27
FINLAND	490	944	613	850	2,100	*1016	*405
FRANCE	44556*	45096	*43708	*49129	121,403	****55629	****67970
GERMANY	4500	*1362	*416	*570	1,409	402*	*297
IRELAND		42	1*	*0	0	0	****0
Italy							****1
LATVIA	1240	1600	***2200	***2000	5,436	300-linseed; 1600-fibre flax	
LITHUANIA	5600	6100	6500	8600	21,251	8600	9 600
NETHERLANDS	3823*	*4089	*3306	*3570	8,822	*4016	*4415
POLAND	4383	2660	2548	1223	3,022	5093	5100 ha (fibre flax 4520 ha, linseed 600 ha).
PORTUGAL	°	*1125	*1500	4678*	11,560	****3522*	****0
RUSSIA	153460	113860	107340	104050	256,032	107 610	
SPAIN	44000	*49045	*87727	*122400	302,463	****13595	*342
SWEDEN	°	*47	*320	*1327	3279	*21	****32
UKRAINE	54500	39975	31200	***21900	54,117	19300	28200
UNITED KINGDOM	20500	*19080	*16700	*14000	34,595	****11816	*4430
Total EU countries						****103867	****94631

Source: Data provided by relevant countries

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

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

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

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

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



## LINEN MARKET/PRICES IN THE EU

### Prices of main products and by-products of flax in Belgium (similar as in other countries of the EU)

Source: VLAS Berichten, the newspaper of the Algemeen Belgisch Vlasverbond, issue No: 23; 16 November, 2001, Oude Vestingsstraat 15, 8500 Kortrijk, Belgium, Director; Mr. Albert Daenekindt. The subscription of this newspaper can be ordered at the above address. Contact: fax: + 32/56/22 79 30, E-mail: bvlasverbond@skynet.be

#### Scutched flax fibre

Water-retted		Dew-retted	
long fibre			
Quality	Prices EURO/tonne	Quality	Prices EURO/tonne
lower quality	up to 2.231,04	lower quality	up to 1.983,15
medium quality	2.255,83-2.602,88	medium quality	2.007,94-2.231,04
very good quality	2.627,67-2.726,83	very good quality	2.627,67-2.850,78
short fibre			
lower quality up to 247,89 EURO/tonne			
higher quality 272,68-371,84 EURO/tonne			
by-products			
<ul style="list-style-type: none"><li>wasted parts of the straw; dew retted price: up to 30,99 EURO/tonne</li><li>wasted parts of the straw price: 37,18 EURO/tonne</li><li>by-products from deseeding price: 24,79 EURO/tonne</li><li>short scutched fibre wastes: up to 99,16 EURO/tonne</li><li>shives used for particleboard production: 14,87-37,18</li></ul>			

## EUROPEAN SUBSIDY FOR THE CULTIVATION OF FLAX AND HEMP

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

### 1999

Idem 1998 and 1997, with the exception that the amounts are no longer in terms of Ecu but Euro.

Subsidy per hectare (gross = net): **815,86 Euro** (25% farmer / 75% scutcher).

### 2000

Subsidy per hectare (gross = net): **795,46 Euro** (25% farmer / 75% scutcher).

### 2001

With the crop 2001 started a new and completely modified Common Organisation of the Markets in flax and hemp, containing a subsidy for the grower and a subsidy for the primary processor of the flax straw.

#### 1. Grower

Flax and hemp are included in the subsidy system for some arable crops (including the obligation to lay fallow 10% of the arable crops area).

Subsidy 2001 (basis) for fibre flax and hemp: 75,63 euro/ton.

This amount has to be multiplied by the "historic yield for cereals" that has been fixed for each agricultural region. Belgium, for instance, has 13 different agricultural regions, and the subsidy amount for flax fluctuated between 509 and 275 euro per hectare.

#### 2. Primary processor (scutcher)

A subsidy is given to the primary processor for the quantity of fibres that is produced:

- 100 euro per ton for long flax fibres;
- 90 euro per ton for short flax fibres and hemp fibres.

#### 3. Additional subsidy

In some regions (Netherlands, Belgium and North of France) an additional subsidy is assigned to the fibre producer:

- for northern regions: 120 euro per hectare;
- in southern regions: 50 euro per hectare.

### 2002

Same system as for the crop 2001, but change of some subsidy amounts.

1. Grower: basis subsidy 63 euro/ton (instead of 75,63 euro);

2. Processor (scutcher):

- 160 euro per ton for long flax fibres;
- 90 euro per ton for short flax fibres and hemp fibres.

3. Additional subsidy (NL/B/F)

- for northern regions: 120 euro per hectare;
- in southern regions: 50 euro per hectare.

## COUNTRY DATA ON FIBRE FLAX

## BELARUS

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

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

## BULGARIA

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

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

**CZECH REPUBLIC**

	1996	1997	1998	1999	2000	2001
Cultivated area [ha]	7300	2155	4117	5348	6302	7095
Harvested [ha]	(only) 5899	2090	3719	5232	5911	5566
Straw yield [t/ha]	3.10	3.19	3.01	3.34	2,36	3,05
Long fibre yield [t/ha]	0.40	0.32	0.3	0,39	0,35	
Long fibre production [t]	2800	1739	1235	2098	2235	
Short fibre yield [t/ha]	0.60	0.53	0.5	0,53	0,42	
Short fibre production [t]	4400	2586	1835	2797	2661	
Percentage of dew retting [%]	100	100	100	100	100	
Mill consumption of flax [t]	18272	17354	11200	17484	16811	
Seed yield [t/ha]	0.40	0.51	0.51	0.56	0,50	
Yarn production [t] (wet + dry spinning)	3600	4081	3850	4835	5301	
Production of textiles [1000 m]	9854	10166	12160	*	*	*
Particleboards production [m <sup>2</sup> ]	52600	31070		0	0	
Export of seed [t]	913	1100	730	1340	3421	
Export of yarn [t]	1113	1487	1202	1364	1839	
Export of fibre [t]	280	168	100	90	267	
Export of linen textiles (fabrics) [1000 m]	7800	8124	°	*	*	
Export of cloth (more than 85% linen) [t]	1582	1705	1830	2138	2470	
Export of cloth (less than 85% linen) [t]	465	211	180	184	264	
Import of fibre [t]	440	1516	2248	2925	3001	
Import of yarn [t]	95	81	79	349	456	
Import of textiles [1000 m]	1600	1354	°	*	*	
Import of seed [t]	37	40	771	561	449	
Import of linen cloth (more than 85% linen) [t]	279	289	16	512	609	
Import of linen cloth (less than 85% linen)[t]	145	58	28	76	103	

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

**ESTONIA**

	1995	1997	1999	2000	2001
Cultivated area [ha]	185	323	115	137 <sup>1)</sup>	27 <sup>1)</sup>
Straw yield [t/ha]	0,870	0,198	0,513	0,577	3,9 <sup>2)</sup>
Long fibre yield [t/ha]					
Long fibre production [t]	°				
Short fibre yield [t/ha]					
Short fibre production [t]	°				
Percentage of dew retting [%]	°				
Mill consumption of flax [t]	°				
Seed yield [t/ha]	°0,373	0,303	0,513	0,212 <sup>3)</sup>	
Yarn production [t] (wet + dry spinning)	°				
Production of textiles [1000 m]	°-	10	3910	7070	
Particleboards production [m <sup>2</sup> ]	°				
Export of seed [t]	°	276	452	71	317 <sup>3)</sup>
Export of yarn [t]	°34358	13868	50970	132339	99786 <sup>3)</sup>
Export of fibre [t]	0399	454	236	1282	2002 <sup>3)</sup>
Export of linen textiles (fabrics) [1000 m]	°				
Export of cloth [1000 m <sup>2</sup> ]	°17217	180	166217	249532	296539 <sup>3)</sup>
Import of fibre [t]	33322	5123	62834	137460	148850 <sup>3)</sup>
Import of yarn [t]	1662	886	19775	22568	6895 <sup>3)</sup>

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

## FINLAND

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

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

## LATVIA

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

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

## LITHUANIA

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

sent by: \*/ calculated data

\*\*/ O. Juknėviciene, Minist. of Agric., Dep. of Strategy of Plant Production, Prospekt Gediminas 19, Vilnius, Lithuania; completed by Dr. Director Algimantas Endriukaitis, LIA – The Lithuanian Institute of Agriculture Ulyte Research Station, Panevėžio, 7, Ulyte Panevezys Distr., LITHUANIA

## POLAND

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

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

\*/ estimated data; \*\*/ in 1000m<sup>2</sup>; <sup>1/</sup> includes rural fibre produced in 1997 and 98

## RUSSIA

	1996	1997	1998	1999	2000	2001
Cultivated area [ha]	153460	113860	107340	104050	107610	
Straw yield [t/ha]	1.74	0.95	1.43	1.02	2.11	
Long fibre yield [t/ha] <sup>1</sup>	0.43 <sup>4</sup>	0.25 <sup>4</sup>	0.43 <sup>4</sup>	0.36 <sup>4</sup>	0.55 <sup>1</sup>	
Long fibre production [t] <sup>1</sup>	58990 <sup>2</sup>	23400 <sup>2</sup>	33540 <sup>2</sup>	23700 <sup>2</sup>	511700 <sup>2</sup>	
Short fibre yield [t/ha]	°	°				
Short fibre production [t]	°	°				
Percentage of dew retting [%]	°	°				
Mill consumption of flax [t]	°	°				
Seed yield [t/ha]	0.14	0.13	0.08	0.10 <sup>5</sup>	0.17	
Yarn production [t] (wet + dry spinning) single -thread yarn	36632 <sup>3</sup>	31565 <sup>3</sup>	17093 <sup>3</sup>	20108 <sup>3</sup>	19806 <sup>3,4</sup>	16787
Production of textiles [mln m <sup>2</sup> ]	111	105	68.8 <sup>1</sup>	90.4 <sup>2</sup>	113 <sup>4</sup>	98,4
Particleboards production [m <sup>2</sup> ]	°	°				
Export of seed [t]	0.2	–	49			
Export of yarn [t]	212	906	433			
Export of fibre [t]	181	1934	969			
Export of linen textiles (fabrics) [1000 m]	12829 <sup>3</sup>	13932 <sup>3</sup>	30214 <sup>3</sup>			
Export of cloth [1000 m <sup>2</sup> ]	–	–				
Import of fibre [t]	6764	11932 <sup>3</sup>	11682			
Import of yarn [t]	49	570	456			
Import of textiles [1000 m]	4782 <sup>3</sup>	5692 <sup>3</sup>	61365 <sup>3</sup>			
Import of seed [t]	24	19	147			
Import of linen cloth [1000 m]	°	°	°			

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

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

## UKRAINE

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

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

\*/ in mln m<sup>2</sup>

## STATISTICAL DATA ON LINSEED

## LINSEED AREA HARVESTING [ha]

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

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

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

## STATISTICAL DATA ON LINSEED (FLAXSEED)

Data about linseed cultivation area, provided by certain countries:

<b>Czech Republic</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Cultivated area [ha]	600	646	2251	1700	3250

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

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

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

<b>Latvia</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Cultivated area [ha]	1600	220	200	300	

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

<b>Russia</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Cultivated area [ha]	92360	60500	62000	87630	

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



## STATISTICAL DATA ON INDUSTRIAL HEMP

### HEMP HARVESTED AREA

Fibre Hemp Area Harvested [ha]	Year			
	1996	1997	1998	1999
World	57,807	58,687	59,008	59,015
Bulgaria		48	8	8
Canada	0***	0***	2000***	1200***
Chile	4,200	4,200	4,200	4,200
China	58,000***	15,000	15,000	15,000***
Croatia	14	14	14	14
Hungary	1,200***	900***	1,077	1,077
Korea, Dem People's Rep	17,000	17,000	17,000	17,000
Korea, Republic of	250	250	250	250
Romania	1,000***	2,000***	3,080	3,000***
Russian Federation	11,490*	9,490*	6260*	10,230*, 16,980*in 2000
Ukraine	4,000***	3,500***	2,000	2,000
Yugoslavia, Fed Rep of	679	1,000***	1,000***	1,000***

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

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

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

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

### HEMP HARVESTED AREA IN EUROPEAN UNION COUNTRIES AND IN POLAND

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

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

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

### RUSSIA, HEMP CULTIVATION IN RUSSIAN FEDERATION IN 1995-1999

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

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

## FUTURE PLANS

### 2002

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

### 2003

1. Workshop of the WG/1 – Breeding, Cultivation and Plant Genetic Resources Working Group, as well as WG/6 – Biology and Biotechnology, June 2003, “New Approaches and Techniques in Breeding, Cultivation and Biotechnology of Bast Plants”, Bosnia and Herzegovina.
2. International Conference “Flax and Similar Bast Fibre Plants for Humanity Welfare”. National Research Centre (NRC), Cairo, Egypt, November and/or December, 2003
3. Co-organisation of the periodical conference: 6<sup>th</sup> All-Russia Fair-Exhibition-Conference „Russian Flax 2003“, Vologda, Russia, March.
4. Symposium: Fibrous Renewable Raw Materials in Sustainable Agriculture for Industry, September 2003, The Institute of Natural Fibres, Poznan, Poland.

### 2004

1. *The 3<sup>rd</sup> Global Workshop of the Network*. Slovak Republic, Germany, UK, Latvia and Lithuania offered to hold the Global Workshop, June 2004. It has to be decided in due course.
2. Co-organization of the periodical conference: 7<sup>th</sup> All-Russia Fair-Exhibition-Conference „Russian Flax 2003“, Vologda, Russia, March 2003

## REMINDER

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

**Prof. Dr. Ryszard Kozlowski (Newsletter Editor)**

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