

Dear Readers,

Recently two important events of our Network have been conducted: the 2nd Global Workshop (the General Consultation) held on 2-6 June 2001 in Borovets, as well as the International Conference "Bast Fibrous Plants at the Turn of Second and Third Millennium" held on 18-22 September 2001 in Shenyang City, China.

On the next pages of this bulletin you can find reports of these conferences.

They were great events according to the opinion of the representatives of the FAO in Rome, governments, industry and scientists. We include some relevant comments on pages 12 and 14, among those expressed by Deputy Ministry of Polish Economy – Prof. Dr. Wojciech J. Katner, the speaker of the conference in China.

During these conferences we discussed the future improvement of our Network activity, especially in the area of better connection with industry.

All our Working Groups' chairmen confirmed, that nowadays the most important areas of our activity should be technology transfer and more intensive links and ties with European Union research programmes (Fifth and Sixth Framework Programmes), as well as with related COST Actions (COST – European Co-operation in the Field of Scientific and Technical Research).

We are convinced, that FAO headquarters' officials and authorities at the EU in Brussels welcome and appreciate collaboration and close co-operation.

The Editors of the EUROFLAX Newsletter cordially invite your discussion and comments on that subject.



Yours sincerely,

The Editor, Prof. Dr. Ryszard Kozłowski

CONTENTS

STRUCTURE OF THE NETWORK.....	2
WORKING GROUP NEWS:	4
FLAX, HEMP AND ALLIED FIBRES IN THE WORLD	4
ANNOUNCEMENTS AND PRESENTATION OF INSTITUTIONS INVOLVED IN RESEARCH ON FLAX, HEMP AND OTHER BAST PLANTS	9
ACTIVITIES OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS	10
PROPOSALS FOR THE NEXT GLOBAL WORKSHOP	10
OPEN COMPETITION FOR THE BEST PAPER OR POSTER PRESENTED DURING THE CONFERENCES OF THE FAO NETWORK.....	11
REPORTS OF THE EVENTS.....	12
I. REPORT ON THE 2 ND GLOBAL WORKSHOP (GENERAL CONSULTATION) OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS, JUNE 3-6, 2001, BOROVETS, BULGARIA	12
II. REPORT ON THE INTERNATIONAL CONFERENCE "BAST FIBROUS PLANTS ON THE TURN OF SECOND AND THIRD MILLENNIUM", 18-22 SEPTEMBER 2001 (DURING A "SPECIAL MONTH"), IN SHENYANG CITY, CHINA	14
LINKS OF THE FAO/ESCORENA EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS WITH DIFFERENT NETWORKS AND PROJECTS	20
EDITORIAL.....	22
SPECIAL STUDIES AND NEWS.....	23
NEWS FROM THE INSTITUTE OF NATURAL FIBRES (INF) IN POZNAN, POLAND – THE COORDINATION CENTRE OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS.....	23
COST ACTION 847 "TEXTILE QUALITY AND BIOTECHNOLOGY ".....	27
COST 847 TEXTILE QUALITY AND BIOTECHNOLOGY	28
NEWS REGARDING PUBLICATIONS ON NATURAL FIBRES.....	29
PUBLISHING ACTIVITY OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK SINCE 1989.....	29
STATISTICAL DATA ON FLAX.....	32
FUTURE PLANS.....	34

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 temporarily: Prof. Dr. Alessandro Bozzini the Senior Officer for Research and Technology – and 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 350 experts from 50 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, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Latvia, Lithuania, Mexico, Netherlands, Nigeria, Norway, Pakistan, Poland, Portugal, Republic of Serbia, Romania, Russia, Slovakia, Spain, South Africa, Sweden, Switzerland, Thailand, Turkey, UK, Ukraine, and the USA.

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

NETWORK WORKING GROUPS (WG):

Please note!

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

http://www.fao.org/regional/europe/escorena/fla_crop.html

WG/1. Breeding and Plant Genetic Resources

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

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WG/3. Economics and Marketing

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**WG/4. Quality**

Chairman – **Prof. Dr. Shekhar Sharma**
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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-ordinated the following project to the EU: **TEXTILE QUALITY AND BIOTECHNOLOGY – a proposal for a new 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. 19.

**WG/5. Non-Textile Applications**

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WG/6. Biology and Biotechnology

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WORKING GROUP NEWS:

THE NEW CO-CHAIRMEN ELECTED:

The experts who attended the 2nd Global Workshop in Bulgaria agreed to the proposal of the Network Coordinator to assign the new experts to co-chair the Working Groups. Namely the following experts were proposed and agreed to help and act with the chairmen;

WG/1: Breeding and Plant Genetic Resources

Co-chairman: **Dr. Alexandra Balabanova**, Head of Flax Department, AgroBioInstitute, Kostinbrod, Bulgaria

WG/2: Extraction and Processing

Co-chairman: **Mr. Olivier Demangeat**, Chief of IP, N. Schlumberger & Cie, Guebwiller Cedex, France

WG/3: Economics and Marketing

Co-chairman: **Mr. Gordon Mackie**, International Textile Consultant; UK

WG/4: Quality

Co-chairman: not chosen yet

WG/5: Non-Textile Applications: **Prof. Dr Poo Chow**, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, Illinois, USA

WG/6: Biology and Biotechnology

Co-chairman: **Prof. Dr. Atanas Atanasov** – Director, Institute of Genetic Engineering, Plant Biotechnology Research Center, Kostinbrod, Bulgaria

THE PROPOSAL TO CREATE A NEW WORKING GROUP

Dear Network members,

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



FLAX, HEMP AND ALLIED FIBRES IN THE WORLD

A speech delivered by Mr. Albert Daenekindt at the Annual Session of the Flax Union of the Czech Republic on 27th November 2001. Prepared and proposed for the EUROFLAX dissemination by Dir. A. Daenekindt, Chairman of FAO Network Working Group 3, Algemeen Belgisch Vlasverbond, Oude Vestingsstraat 15, B -8500 Kortrijk, Belgium, tel: +32/ 56 22 02 61, fax: +32/56/227930, E-mail: bvlasverbond@skynet.be

Dear Mr. President,
Ladies and Gentlemen,

It is an honour for me to address you on the occasion of the annual meeting of the Flax Union of the Czech Republic. Thank you, Mr. President, for giving me this opportunity.

I was asked to present you an evaluation of this year's flax harvest in Western Europe, and to tell you something more about Confédération Européenne du Lin et du Chanvre – C.E.L.C., its structure and its activities.

I. FLAX HARVEST 2001 IN WESTERN EUROPE

As far as my first item is concerned, I would like to give you, first of all, some data on **the area of textile flax** that has been **sown in 2001**.

Récolte (Harvest) 2001
(chiffres provisoires) (provisional data)

Ressources théoriques (Theoretical resources)
campagne (campaign) 2001/2002
(en tonnes) (in tons)

	(scutched flax) lins teillés	(tow) étoupes
<i>Opening stock</i>		
1. STOCK DEBUT CAMPAGNE (30.06.2001)		
	13.325	13.679
<i>Theoretical supply of harvest 2001</i>		
2. APPORT THEORIQUE DE LA RECOLTE 2001		
	38.240	26.150
	TOTAL 51.565	39.829
<i>campaign</i> (campagne 2000/2001)	(96.525)	(58.713)

- 47%

- 32%

52^{ème} Congrès CELC – Amsterdam (52th Congress CELC)
Réunion d'information Economie et Politique Agricole / Section commune Culture-Teillage
(Information Meeting Agricultural Economy and Policy/ Common Section Cultivation – Scutching)

In France, 66.561 hectares of flax were sown with textile industry destination and 1.400 hectares were contracted by the French paper industry.

In Belgium, the Netherlands, Germany, Austria, Finland and Denmark respectively 16.900, 4.415, 297, 130, 405 and 19 hectares were sown.

We can therefore state that this year in the European Union about 88.800 hectares were sown with the purpose of being processed in the traditional textile industry. Compared with the harvest 2000, this area represents an increase of 22%.

For the sake of completeness, we should also indicate that 215 hectares were cultivated in Spain, 4.430 hectares in the United Kingdom and 54 hectares in Sweden. However, these 4.700 hectares cannot be added to the 88.800 hectares in the former traditional flax countries, because they cannot be taken into account for the determination of the textile fibre production in the European Union.

From the total figure of 88.800 hectares we have to subtract at least 17.000 hectares, that are not scutchable due to the bad weather conditions we had in September. In the three traditional production countries the following area were lost:

- 8.400 hectares in Belgium;
- 6.561 hectares in France;
- 2.015 hectares in the Netherlands.

Taking account of the yield data, we can now calculate **the fibre supply** in the following way.

Récolte (Harvest) 2001
(chiffres provisoires) (provisional data)

Apport théorique (Theoretical supply)
de la récolte (of harvest) 2001
(en tonnes) (in tons)

(scutched flax) lins teillés	(tow) étoupes
---------------------------------	------------------

France	30.000	21.000
Belgique (<i>Belgium</i>)	6.800	3.400
Pays-Bas (<i>The Netherlands</i>)	1.440	1.750

TOTAL	38.240	26.150
(<i>harvest 2000</i>)		
(<i>récolte 2000</i>)	(89.981)	(40.747)

- 58%

- 36%

52^{ème} Congrès CELC-- Amsterdam (52th Congress CELC)
 Réunion d'information Economie et Politique Agricole/Section commune Culture-Teillage
 (Information Meeting Agricultural Economy and Policy/ Common Section Cultivation – Scutching)

In France, the fibre production of the harvest 2001 was estimated at 30.000 tons of long fibre and 21.000 tons of short fibre; Belgium estimated its crop at 6.800 tons of long and 3.400 tons of short fibre;

and the yield data for the Netherlands were 1.400 tons of long and 1.750 tons of short fibre.

Unfortunately, we have no similar information for Germany, Austria, Finland, nor Denmark.

For the three traditional flax producing countries - Belgium, France and the Netherlands – together, **the theoretical supply** of this year's harvest should amount to approximately 38.240 tons of long and 26.150 tons of short fibre.

Compared to the harvest 2000, these figures represent a fall of 58% for long fibre, and a decrease of 36% for short fibre.

Since the lack of length is one of the main characteristics of the crop 2001, we need to emphasize that a great deal of the 38.240 tons of scutched flax will not be suitable for hackling, especially on the latest Italian hackling machinery.

In order to have an idea of the theoretical availability for the 2001-2002 marketing year, we also have to consider the stocks that existed in the scutching companies at the end of the previous period, namely at the 30th of June 2001.

Récolte (*Harvest*) 2001

(chiffres provisoires) (*provisional data*)

Surfaces semées à destination textile (*Sown area – textile purpose*) (en hectares) (*in hectares*)

	2000	2001	
France	53.680	66.561	
Belgique (<i>Belgium</i>)	13.320	16.900	
Pays-Bas (<i>The Netherlands</i>)	4.016	4.415	
Allemagne (<i>Germany</i>)	402	297	
Autriche (<i>Austria</i>)	450	130	
Finlande	1.016	405	
Danemark	45	19	
TOTAL	72.929	88.727	+ 22%

Espagne (<i>Spain</i>)	13.895	215	
Portugal	3.522	0	
Royaume-Uni (<i>United Kingdom</i>)	11.816	4.430	
Suède (<i>Sweden</i>)	21	54	
TOTAL	29.254	4.699	- 84%

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 Réunion d'information Economie et Politique Agricole/Section commune Culture-Teillage
 (Information Meeting Agricultural Economy and Policy/Common Section Cultivation – Scutching)

It appears that at the end of June the three traditional countries kept a stock of 13.325 tons of long and 13.700 tons of short fibres. These stocks, added to the yield of the harvest 2001, give us a **theoretical availability** at the scutching stage of 51.600 tons of long fibres and 39.900 tons of tow.

Compared with the starting-situation of the previous marketing year, these figures represent a decrease of 47% for long fibre and 32% for tow.

Dear Mr President,
Ladies and Gentlemen,

As you have undoubtedly understood already, the flax harvest 2001 in Western Europe should be qualified as a disaster. The fact that the flax that was brought in does not by far reach a normal fibre yield either, makes the situation even worse. The combination of high losses and low fibre yields explains the exceptionally bad result.

Now we know the volume of fibre this harvest could yield, I propose we try to draw a **provisional long fibre balance** for the 2001-2002 season in Western Europe, that started on July the 1st of this year and ends at the 30th of June 2002. For this exercise we also have to consider the data from the other stages of the industry, as well as the import and export figures. Before doing so, I have to stress the provisory nature of the information I am about to present to you.

BALANCE – TEXTILE FLAX – LONG FIBRE

PERIOD 2001/2002

(F/B/NL – provisional – in tons)

◆ ◆ ◆

A. SUPPLY

1. Opening stock (30.06.01)	37.800
2. Harvest 2001	38.200
3. Imports	4.000
	<hr/>
	80.000

B. DEMAND

1. E.U.	
– classical spinning	30.000
– other applications	2.000
2. Exports extra E.U.	48.000
	<hr/>
	80.000

C. FINAL STOCK (30.06.02)

Scutching	
Trade	0
Spinning	

The long fibre supply for the 2001-2002 marketing year can be calculated as follows.

1. The opening stock of long fibre in June 2001 at all stages of the flax-industry:

– at the Scutching stage	27.300 tons
– with the Trade	4.000 tons
– at the Spinning stage	6.500 tons
giving a total volume of 37.800 tons.	

2. As I mentioned earlier, the yield of the 2001 harvest was estimated at 38.200 tons.

3. Finally, the imports of long fibre in the European Union were estimated at 4.000 tons.

Thus, we can conclude that the overall theoretical supply could amount to some **80.000 tons**.

In order to complete our exercise, we will now try to estimate the volume of long fibre that possibly could be commercialised during the current marketing year. In other words, we should try to forecast **the demand** of long fibre for the twelve months up to the end of June 2002. Together with my colleagues from the other producing countries, we agreed on the following totals of scutched flax consumption:

– inside the European Union	
– classical flax spinning	30.000 tons
– other applications	2.000 tons
– exports to third countries	48.000 tons

Consequently, the overall demand of long fibre during the 2001-2002 marketing year can be estimated at **80.000 tons**.

Since the theoretical supply as well as the demand both totalise some 80.000 tons, there would be no more stocks of long fibre available by the end of June next year.

Facing these data, we can ask ourselves whether this is a healthy market situation. In order to be able to answer this question, we must know what quantity of fibre is normally considered as **a normal working stock** for the Western European flax industry.

From the point of view of the producing companies (flax cultivation, scutching and spinning) the long fibre working stock could be defined as the volume of material they need, in the hypothesis of a stabilized market, to satisfy the needs of their respective clients. We could say that it is up to the companies to ensure that they have sufficient means to finance this stock.

It is clear that the real stock of the operators will be different from the working stock, knowing the different perception they have of the market and the prospects they deduce from it.

The stock policy of the traders may vary from one year to another, and the policy pursued by the spinners seems to orient itself to last minute orders of raw materials and keeping a minimum stock of yarns, except in a situation where the supply in quantity and/or quality is at risk.

Nevertheless, in a period of normal market stability, the working stock at the different stages of the flax industry amounts to about **40.000 tons**.

Taking into account the nonexistent final stock of the 2001-2002 marketing year, there would be **a theoretical shortage of some 40.000 tons of scutched flax**.

The result of the balance we just made leads us to the following **conclusions**.

1. If the market situation remains as we experience it today, namely a brisk trade of scutched flax, there will be not enough raw material available to satisfy the demand. The consequences will be felt at all levels of the flax and linen industry:
 - shortage of raw material for the spinners, who will not be able to meet the needs of the weavers;
 - the weavers will be forced to turn to raw materials other than flax fibres.

2. Many scutchers are faced with a shortage of flax straw to be processed.

This means:

- that they won't be able to occupy their employees, which may cause their departure to other industries;
- no occupation also means no sale, hence no income.
- How will they cover their company's fixed expenses, such as taxes and depreciation of buildings and machinery.
- The lack of income will also have its consequences for next year.

New contracts and payments for the harvest 2002 have to be made, for instance for hiring the land from the farmers, for the purchase of sowing seeds, etc.

CONCLUSION

The 2001-2002 and 2002-2003 marketing years will, in all ways, prove to be extremely difficult for the flax and linen industry in Western Europe in general, and for the scutching companies in particular.

II. C.E.L.C. – INTERNATIONAL PROMOTION

The second part of my speech concerns the activity of the European Confederation for Flax and Hemp, abbreviated as C.E.L.C.

1. C.E.L.C. was created in 1951 and groups the national representative professional organizations of Agriculture, Scutching, Trading, Spinning and Weaving-Finishing of the nine flax and linen producing countries in Western Europe, namely Austria, Belgium, France, Germany, Italy, the Netherlands, Spain, Switzerland and the United Kingdom. The hemp cultivation and processing industry are also associated with C.E.L.C. Switzerland is the only country that is no member of the European Union.

In total, today C.E.L.C. groups 16 associations.

This means that private companies are not a direct member of the Confederation, but their membership lies in the association with their national representative organization. As an exception, a linen producing company may become an individual member of C.E.L.C. when there is no professional organization representing its linen activity in its country.

2. The C.E.L.C. is a nonprofit organization whose main purposes are to create a permanent Europe-wide link between its members, and to defend the members' general interests.
3. C.E.L.C. is composed of five sections, namely:
 - an Agricultural section,
 - a Scutching section,
 - a Trading section,
 - a Spinning section,
 - and a Weaving-Finishing section.

Each national representative professional organization is a member of the section dealing with its own field of activity. However, a national professional organization can also be a member of several sections, generally two, for example Agriculture and Scutching, or Spinning and Weaving. Every two years, each section elects a Chairman and a Vice-Chairman. Each section also has a Secretary. I, for example, am the secretary of the Scutching section.

Each section, on the initiative of the Chairman or his Secretary, organizes meetings where a discussion takes place on matters concerning its specific field of activity (for instance: harvest forecasts or evaluation, market situation, etc.). When required, intersectional meetings can be organized as well.

4. The C.E.L.C. is managed by a Board of Directors, that consists of 13 members who are compulsory chosen among the managers of the representative professional organizations associated with C.E.L.C. The Board consists of:
 - a chairman, elected by the C.E.L.C. General Assembly,
 - the chairmen of each of the 5 sections, 7 other members elected by the General Assembly. The Board meets at least once every six months and has all the necessary authority to make any decisions regarding the association's activity and management.
5. Once a year – and more if necessary – a meeting is organized of the General Assembly, in order to examine the annual accounts, to approve the budgets for the coming year, and if necessary to decide on any other proposal made by the Board.

The General Assembly groups all members of C.E.L.C., and members of the associated organizations are invited as well. At the General Assembly votes are taken at the section level. Each section is entitled to a number of votes in proportion to its economic weight. This means that the national representative professional organizations, members of C.E.L.C., express their votes through the section to which they belong, and not directly at the General Assembly.
6. Each section contributes to the annual operating budget in proportion to its economic weight. Then the budget is spread among the members of each section.
7. At present, the permanent structure of C.E.L.C. consists of a Secretary General and a Secretary.

Finally, I would like to say a few words about **International Promotion**.

In addition to the traditional activities of a professional organization, C.E.L.C. is also conducting promotion activities financed partly with professional funds and partly with support from the European Community.

The 2002 promotion budget, taking no account of the European support, amounts to 1,2 million Euro.

C.E.L.C. is the owner of “Masters of Linen”, the international trademark for Western European quality linen. The right to use the “Masters of Linen” label is reserved to articles in pure linen or mixtures with flax as a principal ingredient, manufactured from Western European raw materials, spun by a spinning mill that is a member of C.E.L.C., and made out of a fabric woven by a weaver who has signed the “Masters of Linen” charter. Besides requirements about origin, this charter imposes a number of quality standards. In other words, the weaver must comply with a series of quality requirements laid down in an articles and conditions book.

The promotion activities are carried out by the joint-stock company “Masters of Linen Promotion S.A.”, a branch belonging for 100% to C.E.L.C.

So much, Mister President, Ladies and Gentlemen, for a survey of the flax harvest 2001, the consequences of the crop failure, and the activities of C.E.L.C. and its promotion branch. Please excuse me if my explanation was sometimes rather theoretical, but I must say that you have been a very attentive audience.

Thank you.



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

FACULTY OF AGRICULTURE – UNIVERSITY OF BOLOGNA

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In Italy, hemp has an ancient tradition. At the end of the 19th Century, the maximum area allocated to hemp was 135.000 hectares of which 72.000 ha was in Emilia-Romagna Region and 33.000 ha in the Province of Bologna. So, it appears clear that in 100 years of life, the Faculty of Agriculture has always been interested to the crop, even if with different final uses depending on the periods.

Different subjects have been included in projects, such as Agronomy, Mechanisation, Phytopatology, Microbiology, Entomology and Economics.

More in detail:

Research was carried out to determine the effect of agronomic treatments on the quality and quantity of hemp production. In particular the effects of genotype, nitrogen fertilisation, plant population, sowing and harvesting time were studied.

Recently, the main subjects of agronomic research have been: plant physiology under light stress conditions; modelling of crop production and quality to develop sustainable systems; physiology of flowering as affected by genotype, growing conditions and photoperiod; environment x phytotechnique x genotype interaction on fibre quality.

In the 60's, research on microbical degradation of pectines during natural retting of hemp was carried out. Anaerobic processes have been studied with the isolation of *Clostridium* spp with high pectinolytic activity. At the same time, the best conditions for retting and recovering by-products such as butyric acid, acetic acid, butanol, ethanol and acetone were analysed.

Entomology research concerned identification of more than 150 species that were found in hemp stands, many of them (around 100) were phytophagous, ?so noxious? insects, and parasitoids. Peculiar attention has been paid to the European corn borer (*Ostrinia nubilalis*).

Epidemiological studies permitted identification of different sintomatologies determined by viruses. In particular the presence of alfalfa mosaic virus (AMV) has been detected on hemp. Comparing varities, a new dwarf disease has been found that is propagated by seed.

Mechanisation research started in the 50's with the set up of stem washers and instruments to detect fibre resistance. Then, different kind of mowers, bundlers, balers and decortivating machines were developed and their functionality evaluated. These machines were adapted on the basis of the final destination of the product. At present main research is devoted to build up a trailed mowing-decortivating machine, unbaling systems for round balers and to organise a sustainable chain for hemp harvesting in Italian environments.

At present, hemp research within the Faculty is carried out by two Departments: Dept of Agro-environmental Sciences and Technology (DISTA) and Dept of Agricultural Engineering and Economics (DEIAGRA). These Departments collaborate with the Industrial Crop Institute (ISCI) that is also located in Bologna.

Studies have been carried out on kenaf (1970-1990) too. Even for this crop, research has been carried out at a multidisciplinary level. More in detail: different cultivars have been studied with the change of environmental conditions, cultivation techniques mainly with regards to growth cycle and density.

Product and paper analyses have been investigated in connection with phytotechnique.

Phytopatologists have characterised fungus and virus diseases that attack kenaf in Italy.

Mechanisation studies have focused on sowing techniques and harvesting methods, comparison of different chains on the basis of the final product destination.



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 below). 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.

Slovakia, 2 August, 2001

Dear Prof. Kozłowski, this is to propose the organization of the next General Consultation, FAO-Flax General Consultation Meeting in Slovakia. Excellent accommodation possibilities, a good kitchen and a lot of nice places we could offer to see during the conference. The staff of our Institute has a lot of experience in organizing international conferences and symposia. We organized: – VII International Conference of Plant Embryologists, Nitra, September 1993, – Recent Advances in Plant Biotechnology – 1st International Symposium, Nitra, October, 1995 Nitra, October 1995 – Workshop within COST 822: Identification and control of phase changes in rejuvenation, and the Management Committee Meeting of COST 822, Nitra,

October 1997 – INCO-COPERNICUS working group meeting, Nitra, April 1999 – IV European Symposium on Amaranthus, Nitra, August, 1999 – Recent Advances in Plant Biotechnology -From Cells to Crops – 3rd International Symposium, the High Tatras, Stara Lesna, September 1999 – International Seminar Day: Current trends in Plant Biotechnology, Nitra, August 2000, on Plant Embryology, Nitra, September, 2001. The list of already organized meetings and activities (always taking about one week) is a good guarantee that we are competent for organization of such meetings and that we will organize the FAO General Consultation Meeting on a high scientific and social level. We always prepare a book of abstracts, and publish the contributions. Dear professor Kozlowski, please kindly take into consideration our proposal for organizing the FAO General Consultation meeting in 2004 in Slovakia.

With warmest regards,

Anna Pretova

PhD., director of the Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences

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tel.: +421 37 73 366 59, fax: +421 37 73 366 60, e-mail: pretova@savba.sk

NEXT CONFERENCE PROPOSALS

We have to discuss and decide as well the venue of the next industrial conference, which we provisionally called:

International Conference on Modern Processing including Enzymatic Processing of Lignocellulosic Biomass
and Application of Lignocellulosic Raw Materials

We have not received the written confirmation from the National Research Centre, Cairo, Egypt but we have received the letter from Prof. Dr. Gianpietro Venturi of the University of Bologna, Italy who expressed the readiness to hold this conference in Bologna on behalf of the staff of relevant departments – see the copy of the letter below.

Dear Prof. Kozlowski,

I confirm my availability to organize a conference of "FAO European Cooperative Research Network on Flax and other Bast Plants" at the Faculty of Agriculture, Bologna (Italy). Otherwise I could organise a smaller group concerning a technical session.

Very kind regards,

Gianpietro Venturi , Dipartimento di Agronomia, UNIVERDITA' DEGLI STUDI DI BOLOGNA,

Via Filipp Re 6, 40126 BOLOGNA, Italy, phone of institution +39 51 351510, phone direct +39 15 351533

fax: +39 15 351545, e-mail: gventuri@dns.agrsci.unibo.it

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 this 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.



REPORTS OF THE EVENTS

I. REPORT ON THE 2ND GLOBAL WORKSHOP (GENERAL CONSULTATION) OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS, JUNE 3-6, 2001, BOROVETS, BULGARIA

The Second Global Workshop of the FAO ESCORENA Network on Flax and other Bast Plants, followed the First Global Workshop, which was the Fourth European Regional Workshop, in Rouen, France in 1996.

This Second Global Workshop was organized under the auspices of the FAO Regional Office for Europe in Rome, Italy with the help of the ESCORENA Secretariat – Prof. Dr. Alessandro Bozzini and Dr. Rainer Krell. The organization was coordinated by the network Coordination Centre at the Institute of Natural Fibres, Poznan, Poland represented by the Network Coordinator Prof. Dr. Ryszard Kozłowski and the Network Secretary Eng. Maria Mackiewicz-Talarczyk.

The Bulgarian organizers were: Prof. Dr. Atanas Atanasov of Agro Bio Institute, Kostinbrod, Dr. Alexandra Balabanova, ABI, Samokov, Dir. Rada Koeva of Institute of Plant Genetic Resources, Sadovo, Mr. D. Petrov – VENO HOLDING PLC, and the National Centre for Agrarian Sciences, Sofia, Bulgaria.

Actively participating in this event were the Network's chairmen: Dr. M. Pavelek – AGRITEC Ltd, Sumperk, The Czech Republic, Dir. M. Tubach – IAF, Reutlingen, Germany, Prof. Dr. S. Sharma – The Queen's University of Belfast, U.K., Prof. Dr. C. Morvan – University of Rouen, France and the Network's representatives: Prof. Dr. M.D. El Hariri, NRC, Dokki Cairo, Egypt and Dr. Paul Kolodziejczyk, Olds College Centre for Innovation, Olds, Alberta, Canada.

The event was supported financially by: FAO, International Plant Genetic Resources Institute (IPGRI), the Institute of Natural Fibres, Poznan, Poland, HOLDING PLC, Burgas, Bulgaria and RILSKI LEN S.A., Samokov, Bulgaria.

The Workshop was attended by 84 experts from 22 countries: Argentina, Belgium, Bosnia and Herzegovina – Republika Srpska, Bulgaria, Canada, Czech Republic, Egypt, France, Germany, Italy, Lithuania, Netherlands, Northern Ireland, Norway, Poland, Romania, Russia, Slovak Republic, Sweden, Ukraine, UK and the USA.

The representative of the National Centre for Agrarian Sciences welcomed the guests. Inaugural speeches were made by: Dr. Rainer Krell, Prof. Dr. Atanas Atanasov, and Prof. Dr. Ryszard Kozłowski.

The PLENARY SESSION consisted of the following oral presentations:

Atanasov A. (Agro Bio Institute, Kostinbrod, Bulgaria): Plant Biotechnology – Constraints and Perspectives

Kozłowski R. (The Institute of Natural Fibres, Poznan, Poland): Future Trends in the Production, Processing and Application of Natural Fibres

Demangeat O., Strehle P., N. (Schlumberger & Cie, France): Contribution to the Study of the Flax Spinning and New Developments

Sharma S., Faughey G. J., McCall D., Kernaghan K. Whiteside L. (The Queen's University of Belfast, UK): Quality Assessment During Processing, Weaving and Finishing of Linen Fabric

Westcott N. D., Muir A. D., and Diederichsen A. (Agriculture and Agri-Food Canada, Saskatoon, Canada): Flax Lignan – A Health Product for the New Millennium

Forty one scientific and technical papers were delivered and discussed in five consecutive sessions: Plenary session; Genetic Resources, Breeding, Molecular Biology and Biotechnology; Agrotechnology, Plant Protection; Harvesting, Processing, Quality and Economy; Non-Textile Applications, Environmental Protection, and Miscellaneous.

Thirty-six posters were presented as well. The program, which includes presented papers and posters, is enclosed.

Sixteen lectures accompanied by thirteen relevant posters were presented within the first session. The main topic of presentations was traditional as well as biotechnological methods of breeding. The new progressive methods of flax GR evaluation based on isozyme protein spectra analysis and also DNA analysis were discussed as well as new ways of increasing the genetic diversity using biotechnological methods were found and incorporated into breeding process.

The second session was devoted to agrotechnology and primary processing problems. Thirteen lectures and seven relevant posters were presented and discussed.

During the third session about new methods and technologies of flax and hemp processing, spinning and finishing there were presented nine lectures and seven posters regarding the fiber industrial processing.

The last session was devoted to the miscellaneous problems of flax and hemp utilisation, economy and profitability of production, as well as for the other fibre plants. It consisted of eight oral presentations and twelve posters.

All lectures and poster presentations were published by the Institute of Natural Fibres before the Workshop in the Proceedings "BAST PLANTS IN THE NEW MILLENNIUM". This book edition consists of 438 pages and is available at the Institute of Natural Fibres, Poznan, Poland, Ul. Wojska Polskiego 71b, 60-630 Poznan, fax: +48/61/ 8417830, e-mail: boint@inf.poznan.pl

The Organizational Matters

The vote regarding the post of Network coordinator was conducted officially. As a result of the vote the Institute of Natural Fibres continues to be the Coordination Centre with Prof. Dr Ryszard Kozłowski as the Network Coordinator. Engineer Maria Mackiewicz-Talarczyk stays as the Network Secretary. The EUROFLAX Newsletter will appear twice a year as usual.

Co-chairmen: Prof. Dr. Ryszard Kozłowski proposed to support the Working Group's chairmen by new experts acting as co-chairmen. The proposed and accepted names of the new co-chairmen were: WG/1 Dr. Alexandra Balabanova, ABI, Samokov, Bulgaria; WG/2 Eng. Olivier Demangeat, N. Schlumberger & Cie, Guebwiller, France – the industrial partner, WG/5 Prof. Dr. Poo Chow, University of Illinois, USA; WG/6 Prof. Dr. Atanas Atanassov, ABI, Kostinbrod, Bulgaria. Additionally The Coordinator proposes Mr. Gordon Mackie, International Textile Consultant; UK to support the chairman of the WG/3: Mr. Albert Daenekindt/Belgium.

The cooperation with other Networks working within ESCORENA and the ways to improve the work within the ESCORENA system were discussed during the Panel of Experts meeting with the attendance of Dr. Rainer Krell, Network coordinator and Secretary, the Network chairmen and representatives. It was decided that all the attendees of the Meeting would provide their ideas and suggestions in July 2001.

Dr. Krell who recognized de facto global, inter-regional scope and membership of the Network, underlined simultaneously the financial and structural problems to overcome to change the status of the Network from European to Inter-Regional Network. But it has to be underlined that the Network Coordinator is looking forward to the transition toward the Inter-regional Network. Doctor Krell expressed his suggestions regarding the improvement of the Network activity, among others, that the visibility of the Network should be strongly increased through more efficient publicity, that FAO expects chairmen proposals in that matter, that a new approach should take place, including more promotional materials, additionally the members should consider how the Network looks like from the outside, how others estimate the Network's achievements. It was suggested to submit to the FAO short applied research project ideas e.g. for developing countries.

As far as the place of the Third Global Workshop is concerned, several proposals were presented and discussed, namely Germany, Lithuania (written proposal), Slovak Republic, UK. The time was discussed: 2004 or 2005 in June or September. All those proposals have to be discussed on the global forum for instance, in the Network's information bulletin.

The Network Coordinator proposed to enlarge the scope of the WG3 "Economics and Marketing" by including topics of Technology Transfer. The Coordinator will apply to the FAO and ERNAC (ESCORENA Advisory Board) for final acceptance.

The Network is open to all countries in other regions interested in participating.

At present, the whole Network brings together 350 experts from 50 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, 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.

Other Business:

Moreover, 7 experts involved in plant genetic resources maintenance and protection, as well as in the development of the International Flax Data Base, took part in the meeting organized in Borovets, Bulgaria, namely: Martin Pavelek – chairman of WG1, AGRITEC Ltd., Sumperk, Czech Republic, Alexandra Balabanova – co-chairman of WG1 chairman, ABI Samokov, Bulgaria, A.W. Poliakov – FI Torzhok, Russia, Nina Brutch – VIR St. Petersburg, Russia, Igor Uschapovski – FI Torzhok, Russia, Docho Shamov – IPGR Sadovo, Bulgaria, Przemyslaw Baraniecki – INF Poznan, Poland. The purpose was to increase their involvement in the development of the International Flax Data Base.

As bast plants need a fresh and new approach to win the competition on the world market, we intend to continue our Open Competition, but this time slightly modified. Our Competition will be extended to interesting papers or posters presented during network meetings and conferences. All Network members are cordially invited to participate.

Natural fibres were best promoted by the Fashion Shows of Bulgarian and Polish designers. The company: "Rila Styl" presented the Bulgarian collection as well as the collection of the Institute of Natural Fibres from Poland.

The future plans were discussed during the Global Workshop in Bulgaria. (see proposals on page 34)



II. REPORT ON THE INTERNATIONAL CONFERENCE "BAST FIBROUS PLANTS ON THE TURN OF SECOND AND THIRD MILLENNIUM", 18-22 SEPTEMBER 2001 (DURING A "SPECIAL MONTH"), IN SHENYANG CITY, CHINA

The event was organized as the conference of the FAO European Cooperative Research Network on Flax and other Bast Plants, coordinated by Prof. Dr. Ryszard Kozłowski, acting within the ESCORENA System of the FAO Regional Office for Europe.

Both Polish and Chinese sides had conducted joint efforts, both organizational and financial.

In China the conference received strong organizational input from the Shenyang Municipal People's Government and Shenyang Agricultural Bureau. For two years everyday organizational, basic work has been conducted by the Coordination Centre of the FAO European Cooperative Research Network on Flax and Other Bast Plants at the Institute of Natural Fibres, Poland and the Shenyang Changer-Tongxin Intelligent Engineering co., Ltd. with a strong help of the Company president, the member of World Hemp Centre – Mr. Tian Xin, as well as with the involvement of the member of World Hemp Centre, Mrs. Wu Wei, living temporarily in Poland.

The event was sponsored by Shenyang Agriculture Bureau, Shenyang Changer-Tongxin Intelligent Engineering co., Ltd. and the Institute of Natural Fibres, Poland. Liaoning Municipal People's Government supported the event.

The following institutions and companies assisted the organization as well: Shenyang Construction Committee, Dalian Light Industry Institute, Hunan Dongting Hemp Textile Print Manufactory, Shenyang University, Liaoning Agriculture & Science Council, Liaoning University, Shenyang Agriculture University, Shenyang Light Industrial Management Bureau, Shenyang Science and Technology Committee, Hemp Textile Trade Company from Poland, Liaoning Rongchang Group.

The conference was organized under the patronage of: Liaoning Provincial Government, FAO Representative in China; Embassy of the Republic of Poland in China; Liaoning University in Shenyang, Shenyang University, Liaoning Institute of Cotton & Bast Fibres, Shanghai Textile Research Institute

The conference was attended by 96 experts from 17 countries:

Australia, Belgium, Brazil, Canada, China, Estonia, Poland, Germany, India, Japan, South Africa, Hungary, Italy, Netherlands, Northern Ireland, Switzerland, UK. All attendees were served and taken care of by girls of the conference reception- the students of the Shenyang University.

The solemn Opening Ceremony was sponsored by the General secretary of Shenyang Municipal People's Government. Mr. Li Baoquan – the Vice-mayor of Shenyang Municipal People's Government, opened the conference. Speeches were given by the Director of the China Agriculture Department Technology Centre, Mr. Xia Jingyuan, and Mr. Zhang Shiping – the Director of the China Textile Industry Committee. Poland was represented by the speeches of the Deputy Minister of Polish Economy – Prof. Dr. Wojciech J. Katner and Prof. Dr. Ryszard Kozłowski – The Network Coordinator.

Forty three texts of scientific and technical papers and fourteen abstracts of posters are presented in the Proceedings of the conference, printed before the event at the Institute of Natural Fibres, Poznan, Poland.

Due to the uncertain and difficult world situation after terrorists' attacks on the USA, many registered speakers and experts did not dare to fly. That was the reason, that from 43 printed papers only thirty lectures were delivered and discussed in five consecutive sessions: Plenary session; Genetic Resources, Breeding, Biotechnology and Molecular Biology and Biotechnology; Agrotechnology, Plant Protection; Harvesting, Processing, Quality and Economy; Environmental Protection, Non-Textile Applications, and Miscellaneous.

Twelve posters were presented as well. The program, which includes presented papers and posters, is presented below.

The attendees and guests had an opportunity to admire the joint Fashion Show of Chinese and Polish designers. The collections of Chinese apparels made mostly from linen fabrics and knitting were prepared by the recognized designer- Mrs. Qian Xiaonong, Vice Principle and Professor of Artistic Design Department of Dalian Institute of Light Industry. The Polish collection, called "We want to live in flowers" was designed by Mrs. Jola Zalecka-famous and awarded designer, who works as well for the Institute of Natural Fibres. The apparels were presented by beautiful and skilled Chinese models representing Qian Xiao Nong Studio of Design.

PROGRAM OF "BAST FIBROUS PLANTS AT THE TURN OF SECOND AND THIRD MILLENNIUM"

September 18-22, 2001, Shenyang City, China

ORGANIZING COMMITTEE

President

Mr. **Chen Zheng Gao**, Vice Governor of Liaoning Municipal People's Government, Mayor of Shenyang Municipal People's Government

Prof. Dr. R. **Kozłowski** – FAO/SCORENA Network Coordinator, Word Hemp Centre, Director of INF, Poland

Vice President

Mr. **Li Bao Quan**, Vice-Mayor of Shenyang Municipal People's Government

Mr. **Wang Jun** and Mr. **Zhang Fuqing**, Vice General Secretary of Shenyang Municipal People's Government

Mr. **Wu Guimin**, General Director of Shenyang Agricultural Bureau

Mr. **Qin Wenjun**, Vice Director of Shenyang Construction Committee

Mr. **Tian Xin** –President of Shenyang Changer-Tongxin Intelligent Engineering co., Ltd., Shenyang

Dr. Jarosław **Baginski**, Commercial Consellor, Embassy of the Republic of Poland in Beijing

Prof. **Xiao Zheng Yang**, Headmaster of Dalian Institute of Light Industry

Prof. Dr. **Liu Changjiang**, Headmaster of Shenyang Agriculture University

Prof. Dr. **Zang Shuliang**, Vice Headmaster of Liaoning University

Mr. **Fu Jingchang**, Vice President of Liaoning Agriculture & Science Institute

Dir. Martin **Tubach** – IAF, Germany; Chairman of the Working Group2 of FAO/SCORENA Network

General Secretary

Mr. **Chen Yongxiang**, Vice Director of Shenyang Agricultural Bureau

Mr. **Yin Xiangyang**, Vice President of Shenyang Changer-Tongxin Intelligent Engineering co., Ltd.

Maria **Mackiewicz -Talarczyk**, MSc – Network Secretary, INF, Poznan, Poland

Mrs. **Wu Wei**, HTI and World Hemp Centre, INF, Poland

HONORARY ORGANIZING COMMITTEE

Mr. **Yang Xinhua** – Vice Governor of Liaoning Municipal People's Government

Prof. Dr. W. **Katner**, Under-Secretary of the Ministry of Economy, Poland

Mr. **Zhang Shi Ping**, President & Secretary General of China Bast and Leaf Fibres Textile Association, Director of China Textile International Exchange Centre (Council)

Prof. Dr. A. **Bozzini**, FAO Regional Office for Europe, Rome, Italy

Dr. Rainer **Krell**, FAO Regional Office for Europe, Rome, Italy

H. E. Ksawery **Burski**, the Ambassador of Poland in P.R. of China

Mr. Omar **Salah Ahmed**, FAO Representative in China

Dr. Wiktor **Sobon**, The State Committee for Scientific Research, Warsaw, Poland

Mr. **Yang Xin Hua**, Vice-Governor of Liaoning Province

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- Prof. Dr. Ryszard **Kozłowski** – Institute of Natural Fibres (INF), Poznan, Poland
- Prof. Dr. Dardiri Mohamed **El-Hariri** – Representative of FAO/SCORENA Network in the Middle East, National Research Centre, Egypt
- Prof. Dr. Alcides **Leao** – Representative of FAO/SCORENA Network in South America, UNIVERSIDADE ESTADUAL PAULISTA, Brazil
- Prof. Dr. Shekhar **Sharma** – Chairman of WG/4. Quality, The Queen's University of Belfast, UK
- Prof. Dr. Joachim **Leuschner**, World Hemp Centre and Institute for Natural Technique, Berlin, Germany
- Prof. Dr. hab. Jerzy **Pudelko** – Director of August Cieszkowski University of Agriculture, Poznan, Poland
- Prof. Dr. Grzegorz **Skrzypczak** – the Dean of Soil and Plant Cultivation Dept., University of Agriculture, Poznań, Poland
- Prof. Dr. Henryk **Burczyk** – Deputy Director of the Institute of Natural Fibres, Poznan, Poland
- Dr. Claudine **Morvan** – Chairman WG/6. Biology and Biotechnology, University of Rouen, France
- Dr. Paul **Kolodziejczyk** – Representative of FAO/SCORENA Network in North America, Olds College Centre for Innovation, Olds, Alberta, Canada
- Dr. Martin **Pavelek** – AGRITEC, Chairman of Network working group WG/: Breeding and Plant Genetic Resources, the Czech Republic
- Eng. Martin **Tubach** – Chairman of WG/2. Extraction and Processing, Managing, Director of the Institut für Angewandte Forschung, Germany
- Wu Wei**, MSc, HTI, Shenyang Changer-Tongxin Intelligent Engineering co., Ltd., Shenyang, China; INF, Poland
- Maria **Mackiewicz-Talarczyk**, M.Sc (Agr), Eng. Institute of Natural Fibres (INF), Poznan, Poland

THE MEMBERS OF NATIONAL SCIENTIFIC COMMITTEE OF CHINA

- Prof. Dr. **Yu Cheng Deng**, Dept of Plant Resources and Phytochemistry, Institute of Applied Ecology, Academy of Sciences, Shenyang
- Prof. Dr. **Kui Qing Chai**, President of Shenyang University,
- Prof. Dr. **Yang Huaren**, Vice-President of Shenyang University
- Prof. Dr. **Zhang Shu Liang**, Vice-President of Liaoning University
- Prof. Dr. **Xiao Zheng Yang**, President of Dalian Institute of Light Industry
- Sen. Eng. **Luo Shao Chu**, Shenyang Changer-Tongxin Intelligent Engineering co Ltd.

PROGRAM

PLENARY SESSION

Katner W., (Ministry of Economy, Poland): THE SECOND DECADE OF TRANSFORMATION TO FREE MARKET ECONOMY IN CENTRAL AND EASTERN EUROPE

Katner W.¹, Kozłowski R.², Helwig M.², (¹Ministry of Economy, ²The Institute of Natural Fibres, Poznan, Poland): TRANSFER OF TECHNOLOGY – AN IMPORTANT TOOL FOR EFFECTIVE COOPERATION

Wang Yu Fu, Liu Y'an, Kang Qinghua, Lu Ying, Yang Xue, Song Xianyou, (Academy of Agricultural Science of Heilongjiang Province, China): THE HISTORY, PRESENT SITUATION AND DEVELOPMENT DIRECTION OF FLAX BREEDING IN CHINA

Wu Wei, (HTI, Shenyang Changer-Tongxin Intelligent Engineering co., Ltd., Shenyang, China; INF, Poland): POTENTIAL OF NATURAL CELLULOSIC FIBROUS RAW MATERIALS IN CHINA

Mackie G., (Textile Engineer, UK): HEMP – *CANNABIS SATIVA* – A PRAGMATIC LOOK AT ITS BAST FIBRE COMPETITORS AND HEMPS PLACE IN THE WORLD TEXTILE INDUSTRY

Alex R., Nebel K., and Tubach M. IAF, Reutlingen, Germany: ECONOMICAL CONSIDERATIONS ON CULTIVATION, PROCESSING AND USE OF HEMP AND FLAX IN GERMANY

First Technical Session

GENETIC RESOURCES, BREEDING, MOLECULAR BIOLOGY and BIOTECHNOLOGY

Rutkowska-Krause I.¹, Mankowska G.¹, Poliakov A.W.², (¹The Institute of Natural Fibres, Poznan, Poland, ²All Russian Flax Research Institute (VNIL), Torzhok, Russia): ENDOPOLYPLOIDY AS A STAGE CHARACTERISTIC FOR IN VITRO CULTURE OF FLAX (*LINUM USITATISSIMUM* L.)

Second Technical Session:

AGROTECHNOLOGY, PLANT PROTECTION

Scheifele G., (Kemptville College/University of Guelph, Lakehead University, Ontario, Canada): AGRONOMIC FIELD STUDIES ACROSS NORTHERN ONTARIO, CANADA FROM 1997 TO 1999 EVALUATING FACTORS EFFECTING INDUSTRIAL HEMP STRAW AND GRAIN PRODUCTION

Ngada Leonard Lumkile, (Department of Agriculture and Land Affairs, Stutterheim, South Africa):

INDUSTRIAL HEMP DEVELOPMENTS IN SOUTH AFRICA. A CASE STUDY OF THE EASTERN CAPE

Viikna A.*, Soiola M.* and Kikkas E.**, (*Tallinn Technical University, Estonia **Ministry of Agriculture, Estonia): THE DEVELOPMENT AND FUTURE PERSPECTIVES FOR THE FLAX INDUSTRY IN ESTONIA

Ivanyi L., Izsaki Z., Bocsai I. (Tessedik Samuel College, Faculty of Agriculture, Water and Environmental Management, Szarvas, Hungary): RESULTS OF AGROTECHNICAL RESEARCH WITH DIOECIOUS AND MONOECIOUS HEMP VARIETIES IN HUNGARY

Heller K., Rolski S., Andruszewska A., (The Institute of Natural Fibres, Poznan, Poland): FIBRE FLAX CULTIVATION IN SUSTAINABLE AGRICULTURE IN POLAND

Amaducci S.¹, Errani M.², Struik P.³, Terhurne K.³ and Venturi G.² (¹Università del Sacro Cuore, Italy, ²Università di Bologna, Italy, ³Wageningen University, The Netherlands): OPTIMISING CULTIVATION TECHNIQUES AND FIBRE PROCESSING TO IMPROVE YIELD AND QUALITY OF HEMP FIBRE

Third Technical Session:

HARVESTING, PROCESSING, QUALITY and ECONOMY

Yin Qi, Xiao Zhengyang and Piao Hefu, (Dalian Institute of Light Industry, China): DEVELOPING AND IMPLEMENTING ECOLOGICAL INDUSTRY CHAIN SYSTEM OF HEMP PRODUCTS IN NORTHERN REGION OF CHINA

Guanfengzhi, Xulizhen, Liuyan, China: A BRIEF INTRODUCTION OF CURRENT SITUATION OF FIBER FLAX IN CHINA AND PROPOSALS

Leao A., Sartor S.: UNESP, Faculdade De Ciencias Agronomicas, Botucatu, Brazil: THE SISAL AGRIBUSINESS IN BRAZIL

Tofani C., (FIBRANOVA, Italy): FARMING, DECORTICATION, DEGUMMING AND SOFTENING; AN INTEGRATED PROCESSING SYSTEM TO PRODUCE HIGH QUALITY HEMP FIBRE FOR TEXTILE

Wang H.¹ and Postle R.¹, Kessler R.W.² and Kessler W.², (¹University of New South Wales, Australia, ²University of Applied Science, Reutlingen, Germany): ADAPTIVE PROCESSING OF AUSTRALIAN HEMP FOR SHORT FIBRE SPINNING

Zimniewska M.¹, Witmanowski H.², Kozłowski R.¹, Paluszak J.², (¹The Institute of Natural Fibres, ²Medical University, Poznan, Poland): INFLUENCE OF TWO TYPES OF CLOTHING MATERIALS ON SELECTED PHYSIOLOGICAL HUMAN BODY PARAMETERS

Lu Han, Yan Wu, Weidong Yu: College of textiles, Dong Hua University, Shanghai, China: EVALUATION OF THE PRICKLE OF RAMIE FABRICS

Nebel K., (IAF, Reutlingen, Germany): PREREQUISITES ON HEMP FIBRES FOR THE PRODUCTION OF FINE YARNS BY COTTON SPINNING (OE)

Cierpucha W., Mankowski J., Wasko J., (The Institute of Natural Fibres, Poznan, Poland): THE NEW TECHNOLOGIES OF COTTONIZED HEMP FIBRES PRODUCTION AND PROCESSING IN TEXTILE INDUSTRY

Wang H. and Postle R., (University of New South Wales, Australia): THE QUALITY AND PROPERTIES OF AUSTRALIAN HEMP

Fourth Technical Session:

NON-TEXTILE APPLICATIONS, ENVIRONMENTAL PROTECTION, AND MISCELLANEOUS

Kozłowski R., Mieleniak B, Przepiera A., Rolski S. (The Institute of Natural Fibres, Poznan, Poland): BUILDING BOARDS FROM HEMP STALKS

Kicko-Walczak E., (Industrial Chem. Research Institute, Poland): NEW ECOLOGICAL POLYESTER COMPOSITES FOR BUILDING AND AUTOMOTIVE INDUSTRY

Wuyts Y., (Nonwoven (FELT) department, Procotex Corporation nv Dottignies, Belgium): NATURAL FIBRES IN THE EUROPEAN AUTOMOTIVE INDUSTRY

Huo Qing-yuan et al, Shenyang Institute of Natural Fibers, Liaoning, China: STUDY ON SODA-AQ PULPING OF WHOLE HEMP STEM FOR TCF BLEACHING PROCESS

Zhou Jinghui, Xiao Zhengyang, (Dalian Institute of Light Industry, Dalian, Liaoning China): LONG TERM EXPERIENCE IN THE USAGE OF BAST FIBRE PLANTS (HEMP) FOR PULP AND PAPER IN CHINA

Tian Xin, Wu Wei, Luo Shao-Chu et al, Shenyang Institute of Natural Fibers, Liaoning, China: THE EXPECTING OF PAPER INDUSTRY TCF BLEACHING OF REPLACING WOOD BY HEMP WHICH IS A SUSTAINABLE BRIGHT ROAD OF 21ST CENTURY PAPER INDUSTRY

Tian Xin, WHC, Shenyang, China: BRIEFING ON PRODUCTION OF PULP AND PAPER FROM HEMP WITH TCF BLEACHING PROCESS

Luo ShaoChu's, (Pulp and Paper Institute, Shenyang, China): DIOXIN POLLUTION-A STRATEGIC PROBLEM IN PAPERMAKING INDUSTRY WHICH MUST BE SOLVED

Kozłowski R.¹, Laszkiewicz B.², Barriga J.¹, (¹The Institute of Natural Fibres, Poznan, ² The Polytechnic University, Lodz, Poland): FIBROUS PLANTS AS A SOURCE FOR CELLULOSIC MAN – MADE FIBRES

Gordon Scheifele, Dragla P. (Kemptonville College/University of Guelph, Lakehead University, Thunder Bay, Ontario, Canada): THE MANAGEMENT OF DELTA 9 THC LEVELS IN INDUSTRIAL HEMP GROWN FOR FIBRE AND GRAIN IN ONTARIO CANADA, 1995-2000

Gordon Scheifele, Przybylski, Dragla P.: (Kemptonville College/University of Guelph, Lakehead University, Thunder Bay, Ontario, Canada): ENVIRONMENT AND GENETIC EFFECT ON INDUSTRIAL HEMP GRAIN YIELD AND QUALITY OF SEED CAKE AND OIL EXTRACTED FROM GRAIN GROWN ACROSS NORTHERN ONTARIO, CANADA IN 1998 TO 2000

Chichłowska J.¹, Kozłowska J.², Grygorowicz Z.², Biskuski M.², (¹Agricultural University, ²The Institute of Natural Fibres, Poznan, Poland): PHARMACOLOGICAL STUDY OF THE INFLUENCE OF HEMP MILK ON THE LEVEL OF INSULIN AND THYROID HORMONES, AS WELL THE LIVER FUNCTIONS

Kliber A.¹, Florysiak M.², Chichłowska J.¹, (¹Agricultural University, ² The Institute of Natural Fibres, Poznan, Poland): HEMP SEEDS RATS DIET AND ITS INFLUENCE IN HORMONES LEVEL AND LIPID METABOLISM

LIST OF POSTERS

1. **Andruszewska A., Langner K., Byczynska M.**, (The Institute of Natural Fibres, Poznan, Poland): POLISH FLAX CULTIVARS RESISTANT TO FUSARIUM WILT AND THE ROLE OF MICROELEMENTS IN FLAX PROTECTION
2. **Rutkowska-Krause I.¹, Mankowska G.¹, Malepszy St.²**, (¹ The Institute of Natural Fibres, Poznan, ² Warsaw Agriculture University, Poland): ENDOPLDIDITY PATTERN IN ONTOGENESIS OF HEMP (*CANNABIS SATIVA L.*)
3. **Grabowska L.¹, Orlov M.², Mankowska G.¹**: (¹The Institute of Natural Fibres, Poznan, Poland, ²Ukrainian Academy of Agrarian Science, Institute of Bast Crops, Ukraine): APPLICATION OF ETHRYL IN HEMP BREEDING
4. **Allam A. ¹, Kozlowski R., ², Konczewicz W.²**; (¹ Cairo, Egypt, ² The Institute of Natural Fibres, Poznan, Poland): APPLICATION OF OSMOTIC PRESSURE IN DEGUMMING OF FLAX
5. **Manys S., Mazur E., Kubacki A.**, (The Institute of Natural Fibres, Poznan, Poland): MODERN POSSIBILITIES OF FLAX/HEMP PROCESSING
6. **Mackiewicz-Talareczyk M.**, The Institute of Natural Fibres, Poznan, Poland: SURVEY AND POSSIBILITIES OF HEMP MARKET
7. **Kozłowska J., Biskupski M., Grygorowicz Z.**, (The Institute of Natural Fibres, Poznan, Poland): ANALYTICAL METHOD OF CANNABINOID TESTING IN HEMP. CHEMICAL PROFILES OF CANNABINOIDS IN INDUSTRIAL AND NARCOTIC HEMP
8. **Kozłowski R., Mankowski J., Cierpucha W., Wasko J., Kubacki A.**, (The Institute of Natural Fibres, Poznan, Poland): THE APPLICATION OF HEMP AND ALLIED NATURAL FIBRES AS COMPOSITE MATERIALS IN AUTOMOTIVE INDUSTRY
9. **Grabowska L.¹, Koziara W.²** (¹The Institute of Natural Fibres, ² Agricultural University, Poznan, Poland): THE INFLUENCE OF AGRONOMIC CONDITIONS ON YIELDS OF POLISH HEMP VARIETY BIALOBRZESKIE
10. **Biskupski M., Schmidt-Przewozna K., and Wojtyniak M.**, (The Institute of Natural Fibres, Poznan, Poland): APPLICATION OF YELLOW NATURAL DYESTUFF IN BAST FIBRES
11. **Schmidt-Przewoźna K.**, (The Institute of Natural Fibres, Poznan, Poland): THE SOURCES AND PROPERTIES OF NATURAL DYESTUFF APPLIED IN EAST AND WEST TRADITION
12. **Dr. Brett Suddell**, Interdisciplinary Research Centre, Department of Materials Engineering University of Wales, Swansea, UK: THE APPLICATION OF NATURAL FIBRES WITHIN THE AUTOMOTIVE INDUSTRY



PROGRAMS OF RECENT NATURAL FIBRE CONFERENCES HELD JOINTLY WITH THE NETWORK

**Annual Workshop
COST ACTION 847
Textile Quality and Biotechnology
Carlton Park Hotel, Funchal, Madeira, 3-5 October, 2001**

- ♦ **Textile Quality**
- ♦ PL: Overview of flax fibre quality research programme, H. S. S. Sharma, K Kernaghan and L Whiteside The Queen's University of Belfast, UK
- ♦ IL: On-line control for smart processing, R. Kessler, University of Applied Science, Reutlingen, Germany
- ♦ IL: Galactan metabolism during formation of bast fibre structure, J.E.G. van Dam, V.V. Salnikov and T.A. Gorshkova ATO, Wageningen, The Netherlands
- ♦ IL: Quality of flax from a spinners point of view, G. Rondi, Linificio Canaficio National, Bergamo, Italy
- ♦ **Bast Fibres**
- ♦ PL: World Potential of Bast Fibrous Plants including Bast Fibres and their Diversified Directions of Usage, Ryszard Kozłowski, Institute of Natural Fibres, Poznan, Poland
- ♦ IL: Recent Developments in Enzyme Retting of Flax: Fiber Properties and Potential for Successful Application, Danny E. Akin, Russell Research Center, ARS-USDA, Athens, Georgia USA
- ♦ IL: Improving Bast Fibres By Enzymatic Treatment, Natalia Sedelnik, Institute of Natural Fibres, Poznan, Poland
- ♦ IL: Open
- ♦ **Cellulosic Fibres**
- ♦ PL: Processing Cellulosic fibres with Enzymes - An Overview, Artur Cavaco-Paulo, University of Minho, Portugal
- ♦ IL: Bio-Preparation – the enzymatic way for scouring, Alexander Nikolov, Novozymes, Denmark
- ♦ IL: Enzymology of cellulose degradation, Tapani Reinikainen, VTT Biotechnology, Finland
- ♦ IL: Open
- ♦ **Protein Fibres**
- ♦ PL: Bioprocessing of protein fibers – an overview, Hartwig Hoecker, DWI, Aachen, Germany
- ♦ IL: Enzymatic Modification Of Silk, G. Freddi, Stazione Sperimentale per la Seta, Milano, Italy
- ♦ IL: Novel non-proteolytic enzyme systems for wool modification, Johanna Buchert, VTT Biotechnology, Finland
- ♦ IL: Effects Of An Enzymatic Treatment On The Colour And Colour Fastness Of Dyed Wool Fabrics, A. Riva, INTEXTER, UPC, Spain
- ♦ **Effluent Treatment**
- ♦ PL: Enzymatic and microbial effluent treatment in the textile industry: An overview, G.M. Gubitz, TU Graz, Austria
- ♦ IL: Biological And Sonochemical Degradation Of Selected Azo Dyes, A. Rehorek, University of Applied Sciences Cologne, Germany
- ♦ IL: Biological combined anaerobic/aerobic treatment of textile wastewater, Carla Frijters, PAQUES, The Netherlands
- ♦ IL: Strategies For Improvement Of An Existing Activated Sludge Bioprocess For Treatment Of Textile Effluent, R. O. Jenkins, De Montfort University, Leicester, UK

PL – Plenary Lecture

IL – Invited Lecture

Over 25 submitted POSTERS

SOURCES OF INFORMATION

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

- a. http://www.fao.org/regional/europe/escorena/fla_crop.html [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>

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, <http://www.csl.gov.uk/ienica>
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
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>

Sources of Statistical Data:

FAOSTAT Database Results – <http://apps.fao.org>; <http://www.texdata.com>, <http://www.its-publishing.com>

LINKS OF THE FAO/SCORENA 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 (see page 27).
- **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; 2nd MC together with Working Groups' meeting took part on 18 and 19 October 2001 in Thessaloniki, Greece. The following MC Meeting

combined with WG meetings is expected to be held on 25th-27th April 2002 at the Universidad Politecnica di Cataluna in Barcelona, Spain.

- **INFORM-IENICA project** [Contract No QLK5-2000-00111]: the European Commission supports 3 year project, started on 22 April 2001, during the Inaugural Meeting at Central Science Laboratory (CSL) in York, UK. IENICA is the Interactive European Network for Industrial Crops and their Applications in the Changing Millennium. Coordinator: Mr. Melvyn F. Askew, Ministry of Agriculture, Central Science Laboratory at York CSL/MAFF, SAND HUTTON, YORK, UK 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, 3, 4 & 5 February 2002, organised by Euopoint b.v. by order of IENICA-INFORM.

Bioplastics are becoming more and more qualitatively and functionally advanced plastics. They are comparable in properties to several synthetic plastics, but when disposed of in landfills or in composting units, they degrade into bio-assimilable low molecular weight products by the action of naturally occurring micro-organisms. Legislation will prevent that even trace toxic residues are left behind in the degradation process of the disposed Bioplastics and that the "cradle to grave" life cycle analysis concludes that the product does represent an environmental gain. Bioplastics are a group of materials with many built-in properties, which will assist mankind in a multi-purpose way without affecting the eco-balance.

The second edition of the "Industrial Applications of Bioplastics" conference is a follow-up of the conference organised by Euopoint in Bonn, Germany in 1999. This edition will focus on the end-users of the Bioplastics materials: the cost/performance of every group of products will be presented, product samples will be at the conference either "in-use" or on display or as a videoclip.

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.

Bioplastics work

They are good for the environment, they have the required quality, they solve problems, and they are price competitive. With this message IENICA-INFORM & Euopoint plan to close the conference on February 5 2002.

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

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

The Network members have prepared the project: **EUROBIOFLAX** – Utilization of European Germplasm Biodiversity for Improving and Increasing Sustainable Flax Production in Europe. The project is under further European Commission evaluation.



EDITORIAL

Letters from the readers

22 June 2001

Dear Prof. Kozłowski,

First of all I would like to show my appreciation for the Conference held in Borovets. It has been an interesting opportunity to get in touch with a skilful group of scientists, to learn many things on what is going on in this field and to spend some fun time with nice people.

I would like to remind you that during the general assembly of the network, I made a comment on the lack of a working group on ‘production’ aspects in the network structure.

Well, I would like add some more remarks to that observation.

First of all, talking about ‘production’ I would include the following 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 can become very important for fibre crops, where harvesting mechanisation is not fully developed and it is strictly connected with cultural techniques; furthermore these two joint factors influence quality.

I can understand that some of these subjects can be included in other working groups but I think that whole chain until the gate of the factory should be studied homogeneously.

I will be glad, if you think it is opportune, to have other discussions with you on this subject.

Again, I send you my compliments for your activity as the head of the network and my best regards.

Dr. Piero Venturi, Faculty of Agriculture, Dept. of Agricultural Engineering and Economics, University of Bologna, Via Filippo Re 10, 40126 Bologna, Italy, Phone: +39 51 766632, Fax : +39 51 765318, pventuri@pop.agrisci.unibo.it



2 July 2001

SUBJECT: GREAT CONFERENCE

Dear Maria and Professor Dr. Kozłowski,

I would like to thank both of you for allowing me to have the opportunity to attend the 2nd Global Workshop of the FAO European Cooperative Research Network on Flax and other Bast Plants held in Borovets, Bulgaria on June 3-6, 2001.

This particular international conference was very well organized and held by you and the host country. I personally learned a great deal of the science of flax fiber and hemp fiber.

Since I have been nominated to serve as co-chairperson of one of your Technical Committees, please keep me informed of my responsibility of any future assigned task.

I wish you continuous success in the upcoming conference to be held in China!

Sincerely,

Poo Chow, Professor, Department of Natural Resources and Environmental Sciences, University of Illinois, U-C Campus Urbana, Illinois 61801 USA, 217-333-6670 (Phone), 217-244-3219(fax)



SPECIAL STUDIES AND NEWS

NEWS FROM THE INSTITUTE OF NATURAL FIBRES (INF) IN POZNAN, POLAND – THE COORDINATION CENTRE OF THE FAO EUROPEAN COOPERATIVE RESEARCH NETWORK ON FLAX AND OTHER BAST PLANTS

Institute of Natural Fibres is involved more and more in the research and action to reveal in details and promote the unique comfort providing features of the natural fibres. The test, research and co-operation among others with the Medical University scientists resulted in the new promising results, described in the paper below, which was presented during the conference in Shenyang, China, September, 2001.

Influence of Two Types of Clothing Materials on Selected Physiological Human Body Parameters

Malgorzata Zimniewska¹, Henryk Witmanowski², Ryszard Kozłowski¹, Janusz Paluszak²

¹Institute of Natural Fibres, Poznan, Poland

²University of Medical Sciences, Poznan, Poland

Abstract

The purpose of this study was to evaluate the effect of two types of clothes – linen and polyester on thermophysiological responses during rest and light exercise. The experiment comprised 8 hours of rest, 20 minutes of exercise on a cycle ergometer on the level 75 W and rest until full restitution (stabilization of blood pressure and pulse). The basic index of oxidative stress - total antioxidant status, was investigated.

Six healthy, adult males aged 19–23 volunteered as subjects in this study. Investigation was performed in a climatic chamber at air temperature of 20⁰ C ± 2⁰ C, relative humidity 50% ± 2% and air movement less than 0,5 m/s. The fabric structure of both clothes samples was the same.

The results of the experiment show that the level of total antioxidant status on linen clothes was better than on polyester especially during higher sweating rate conditions.

INTRODUCTION

Clothes is an inseparable requisite in a human's whole life, whether during the day when we are active or at night when we rest. By direct contact with the skin it has a continuous, dynamic and complex effect on our organism. The clothes responsible for a proper microclimate in the area skin-wear should guarantee a perfect comfort and health by ensuring an optimal use comfort.

Today, comfort is a key parameter in apparel science. Generally, comfort is a neutral state, free from pain and discomfort [1]. It is a physiological feeling and a user's opinion in combination of physical activity and atmospheric conditions tightly connected with psychological acceptance of given clothes. The comfort is connected with many complex processes:

1. Physical processes

- visual stimulation – color, light,
- thermal stimulation – heat and moisture transport,
- mechanical pressure on the skin,
- touch stimulation.

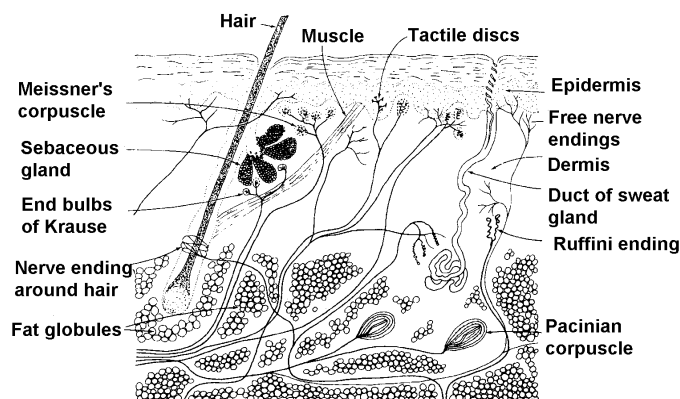
2. Physiological processes

- sensory response of nerve ending to the thermal stimulation, pressure, pain,

- thermoregulation – sweating, control of blood pressure.
3. Psychological processes
 - sensations of combination of different stimuli – the value and importance of that sensation.
 4. General perception – sensation of a state: comfort/discomfort.

The effect of apparel on a human's body is conditioned by the differentiated structure of the skin. The skin has two layers: the outer layer – the epidermis and a inner layer – the dermis, containing among others nerve ends, ducts of sweat glands, hair follicles, muscle filaments, etc.

Fig. 1.



Source: Y. Li, *The Science of Clothing Comfort*. [1]

Descriptions to the Fig. 1.

- Meissner's corpuscles or sensory corpuscles (one of the touch receptors) – are the typical touch receptors
- End bulbs of Krause – considered to be the receptors of decreasing temperature of the environment (feeling of cold),
- Pacinian corpuscle – receptors of pressure
- Ruffini endings – there are a lot of disputes on the physiological function of that organ. Traditionally they are considered to be heat receptors. According to some opinions, however, they are mechanical receptors of touch (feeling of pressure),
- free nerve endings are the simplest and most common form of feeling receptors,
- tactile discs (Merckle tactile discs) – touch receptors.

The nerve ends collect the stimuli from skin exposed to clothes and send the information to the brain. This way they stimulate certain processes in a human's body.

The natural raw materials, including flax, are in all aspects human friendly. They are environmental friendly and guarantee the optimal comfort in use. From the very beginning of human history they serve man, protecting him from the unfavorable elements of the environment and providing a perfect comfort. The synthetic fibers introduced at the end of the 20th century as easier to maintain had been uncritically accepted, despite that they cannot match natural fibers in respect to comfort. However, the question is whether the clothes made of natural fibers provide only a better comfort, or if they also have a better effect on our health as compared to synthetic clothes. The research has been conducted at the Institute of Natural Fibres in cooperation with the University of Medical Sciences in Poznan, that would attempt to answer that question.

The sensory comfort is the most intensively perceived element of complex effect of wear on a human's body. They are accompanied, however, also by processes that are perceived indirectly and still have a strong effect on our health.

The paper presents results of studies on the effect of raw materials used for the production of clothes on the oxidative stress. The cause of oxidative stress effect are reactive oxygen species (ROS) [3], especially free radicals, which damage all main components of a cell and show a mutagenic effect. This may be a cause of cancer. The oxidative stress is observed in situations when cells, tissues or organisms are exposed to additional sources of reactive oxygen species (ROS), ozone, ionizing radiation, cigarette smoke, etc. The cells under stress are not defenseless; the cell is subjected to many adaptation reactions like increase of anti-oxidant concentration and activating enzymes protecting against ROS [2].

MATERIALS AND METHODS

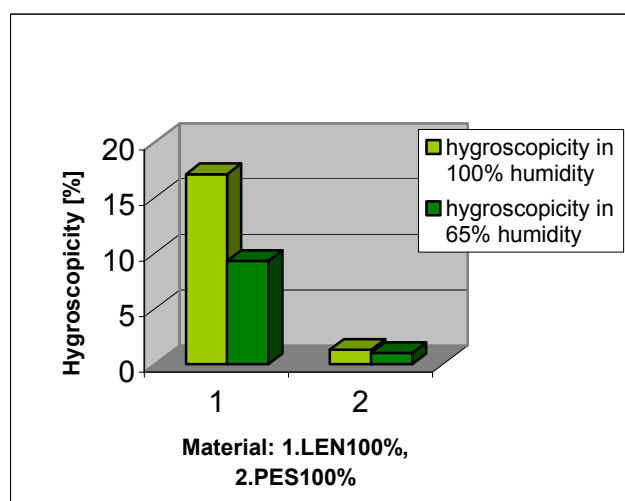
The linen garments represent the natural wear, while synthetics are represented by polyester (PES is the most commonly used synthetic fiber in apparel production) garments. The tested materials were men's shirts made of the mentioned raw materials. They were identical in respect to the model, geometrical form and made in suitable sizes.

The characteristics of chosen metrological parameters of tested fabrics is presented in Table 2 and in graphs 1, 2, 3, 4 and 5.

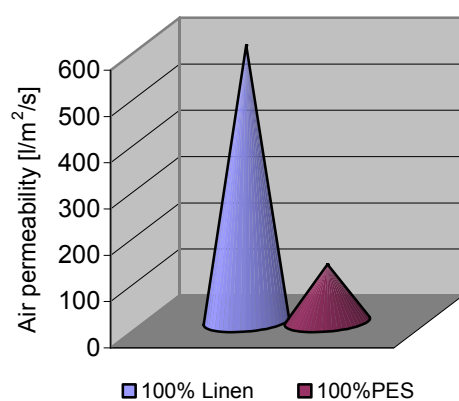
Table 1

Material	Surface density [g/m ²]	Hygroscopicity		Surface resistance [Ω]	Permeability [l/m ² /s]	Thermal conductivity [W/mK]	Heat diffusion [m ² /s]	Heat resistance [Km ² /W]
		at 65% humidity	at 100% humidity					
100% linen	191.6	9.3	17.1	1.5×10^{11}	597	40.3	0.108	14.8
100% PES	90.1	1.0	1.3	6.5×10^9	124	38.6	0.050	5.4

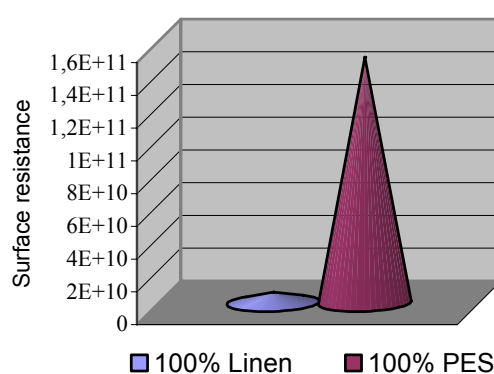
Graph 1. Hygroscopicity of linen and polyester fabrics in different humidity conditions



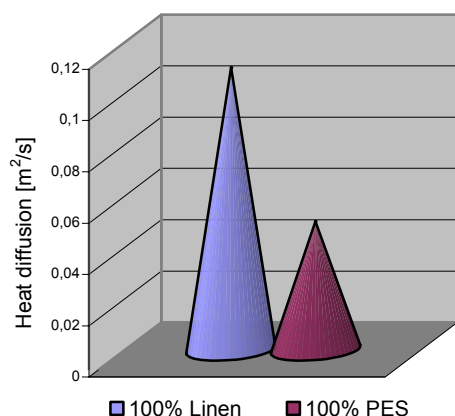
Graph 2: Air permeability of linen and polyester fabrics



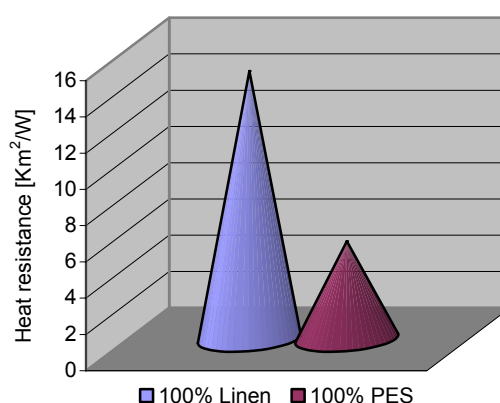
Graph 3: Surface resistance of linen and polyester fabrics [Ω]



Graph 4: Heat diffusion for linen and polyester fabrics



Graph 5: Heat resistance for linen and polyester fabrics



The high level of air permeability and heat diffusion of linen fabrics guarantees the right ventilation, removal of excess CO_2 and water vapor from the skin area, which allows for sustaining the proper temperature of the body. On the other hand, higher levels of heat resistance proves that linen better protects against cold as compared to tested polyester fabric. Linen, unlike polyester does not collect the electrostatic charges on the surface. The excellent hygroscopicity of linen fabrics in both 65% and 100% air humidity means that the sweat will not run down one's back when wearing a linen shirt.

The tests were conducted on 6 healthy, untrained, similarly built males of the age 19-23 years of age. The control group were people wearing linen garments, the tested group were the same people wearing polyester clothes. The people stayed in a specially adopted climatic chamber (Laboratory of Physiological Testing at the INF) at temperature 20°C and relative humidity 50% and air movement smaller than 0.5 m/s.



The tests were conducted at rest – 8 hours, moderate physical exercise – 20 min, and after post-exercise restitution (until blood pressure and pulse were stabilized). The physical activity was on the level of 75 W using the cyclometer (Hellige).

In the period before rest, before exercise, after exercise and after restitution, the physiological parameters were tested and blood samples for biochemical assessment were taken. TAS (total antioxidant status) was measured using colorimetric method (Randox Laboratories Ltd. GB). The authors of the study have a permission of the Bioethical Commission at the University of Medical Sciences in Poznan for conducting those tests.

RESULTS AND DISCUSSION

The aim of the tests was to assess, what different kinds of apparel in given conditions, during rest or exercise may be the cause of the oxidative stress and how the organism defense mechanisms change.

One of the ways to test the ability of the organism to defend itself against the reactive oxygen species is to determine so called total antioxidant status (TAS) [4]. This parameter informs about total ability of tissues to neutralize an exactly determined amount of reactive oxygen species.

The results of TAS level testing in people wearing linen and polyester clothes in controlled conditions are shown in Graph. 6.

Graph 6. The TAS level in people wearing linen and PES

The results show that the TAS value is lower for individuals wearing PES for 8 hours as compared to linen. The difference is considerably larger after moderate exercise. Similarly, TAS is higher in individuals wearing linen after post-exercise restitution.

Obtained results may show that the antioxidative reserves are over, resulting from increased amounts of ROS in individuals wearing PES. It is supposed that the polyester wear may cause higher production of ROS, which reduces the antioxidative reserves of the organism.

Change of parameters of antioxidative system may reflect the oxidative stress i.e. disorder in physiological defense mechanisms against the reactive oxygen species.

The cause of such test results are most probably the following phenomena accompanying the polyester wear:

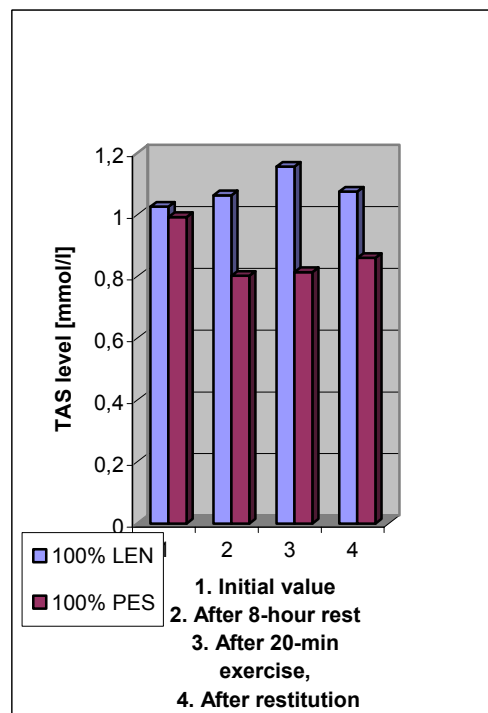
- collecting of electrostatic charges on the surface,
- low air permeability,
- low hygroscopicity,
- increased sweating,
- higher body temperature.

CONCLUSIONS

1. The phenomena observed during conducted tests are very interesting. They confirm our belief that clothing made of linen – a natural fiber – not only guarantees us comfort, but it also may have a positive effect on our health. The apparel made of polyester fibers is not without effect on our organism and it may turn out that this is an unfavorable effect.
2. The lower level of total antioxidative status in individuals wearing polyester may show that this is probably an effect of increased production of reactive oxygen species, which are responsible for the oxidative stress.
3. Due to interesting results described above, the further research will be carried out aiming at identification and analysis of phenomena caused by an effect of clothing made of natural (mainly linen and hemp) and synthetic fibers on the human body.
4. In a time of environment pollution and threats being a consequence of more and more chemicals in our life, the care for healthy apparel (besides healthy food) and proper education will allow users who prefer a healthy life style in making right choices.

REFERENCES

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2. Grzegorz Bartosz : Second face of oxygen, PWN, Warszawa 1995.
3. A.Bast, R.J.A. Goris: Oxidative stress. Biochemistry and human disease. Pharm. Weekbl. Sc. 11, 1989 (6).
4. H. Witmanowski: The influence of oxidative stress on insulin receptors of perfuse rats liver during experimental diabetes mellitus. Habilitation thesis. Poznan, 1997.



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.

Countries participating: Belgium, Denmark, Finland, France, Germany, 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

Number of signatories: The countries which have already signed the MoU: Austria, Belgium, Finland, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Spain, United Kingdom

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: Espoo, October 13, 2000, Third MC in Bucharest, Romania on 20 April 2001.

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 animal fibres	ANIMAL 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/SCORENA Network and WG/2 is led by Prof. Dr. Ryszard Kozłowski-the Coordinator of the FAO/SCORENA Network.

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

1. Quality assessment of natural fibres- name changed to Quality assessment of textile materials

- 1.1. Effect of cultivar, sowing, pulling and retting on fibre and yarn quality
- 1.2. Modification of fine characteristics of fibre 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 animal fibres

- 4.1. Enzymatic scouring of wool
- 4.2. Enzymatic finishing of wool

5. Biotreatment of 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 1st Annual Workshop – the conference of the Action held on 4-6 October 2001 at the same venue.

(See the program on page 21)

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 2nd 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.

It is worth stressing, that Short Terms Scientific Missions (STSM) are available for 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 – WLÓKNA 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 – 15 issues since 1994 (400 printed copies, reaches subscribers and Network members in 43 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.

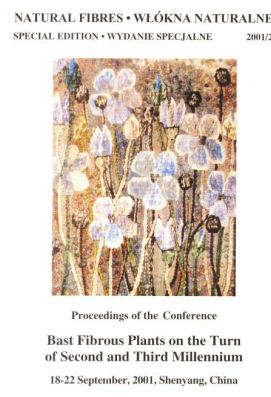
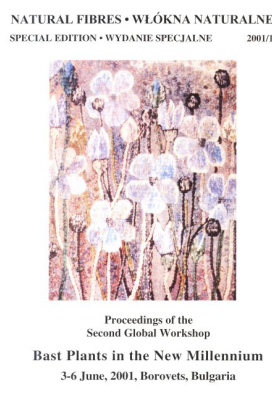
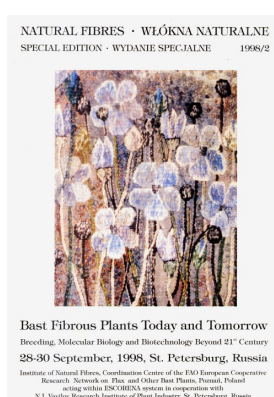
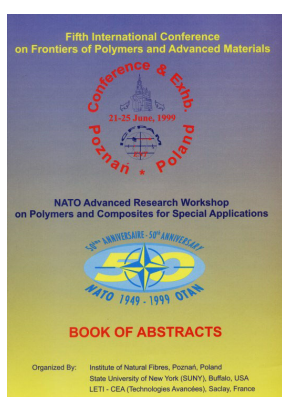
PROCEEDINGS of the European Regional Workshops on Flax:

- “**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, Poznan, Poland
- Proceedings of the Bast Fibrous Plants Today and Tomorrow, Breeding, Molecular Biology and Biotechnology Beyond 21st Century, 28-30 September 1998, St. Petersburg, Russia
- Book of abstracts of the Fifth International Conference on Frontiers of Polymers and Advanced Materials (ICFPAM) and NATO Advanced Research Workshop on Polymers and Composites for Special Applications; 21 and 25 of June 1999, Institute of Natural Fibres, Poznan, Poland
- Research into New Uses of Natural Fibres (1999). Seminar Materials of the FAO Intersessional Consultation on Fibres, 15-16 November 1999, Institute of Natural Fibres, Poznan, Poland
- Innovative Hemp Production and Hemp Products (The News in Hemp Breeding, Cultivation, Harvesting and Processing). Seminar Materials. 23 February 2000, Institute of Natural Fibres, Poznan, Poland
- Proceedings of the International Scientific Session: “Natural Fibres Today and Tomorrow”, held on 28 and 29 June 2000, Institute of Natural Fibres, Poznan, Poland – in print
- 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>

Hemp

- Leson Gero, Pless Petra: Hemp Food and Oil for Health – Your Guide to Cooking, Nutrition, and Baby Care; HEMPTECH, 64 p., Sebastopol 06/99
- Roulac John W.: Industrial Hemp, Practical Products – Paper to Fabric to Cosmetics. HEMPTECH/Chelsea Green Publishing, 50 p., Sebastopol 06/96 [john@hemptech.com, HEMPTECH, (707) 823-2800, www.hemptech.com, P.O. Box 1716 Sebastopol, California 95473 <+> Fax (707) 823-2424, Fax orders: (419) 281-6883, E-mail orders: orders@bookmaster.com.
- Bocsai 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
- THE HEMP COMMERCE & FARMING REPORT, (c) 1999 AHAM, ARTHUR HANKS. Contact at the e-mail address: jfreeman@ssm.net, <http://www.hempreport.com>
- John E. Dvorak, e-mail: boston.hemp@pobox.com invites you to visit the archives by performing a DejaNews power search for Dvorak, hemp, and archives: http://www.dejanews.com/home_ps.shtml
- www.maff.gov.uk/farm/acu/acu.htm -there are several good papers related to utilization of natural fibres on the UK MAFF web site
- H. Burczyk: Hemp Cultivated for Seeds- The Manual for Hemp Farmers (available at the Institute of Natural Fibres, Poznan, Poland)

INFORMATION ABOUT INTERNATIONAL CONFERENCES ON NATURAL FIBRES

Meetings and Conferences in 2001 and 2002 (from August 2001-2002):

- International Conference, "Bast Fibrous Plants at the Turn of Second and Third Millennium", Shenyang City, China, September 18-22, 2001
- 11 Dec 2001 Renewable Resources - becoming a reality. A meeting organised by the Crop Protection Group of SCI, with the support of the Central Science Laboratory (CSL) 14/15 Belgrave Square, London, SW1X 8PS, Contact: Alex Jennings, tel: + 44 (0) 207 598 1564, email: alex.jennings@soci.org
- 18-20 December 2001 Biomass and Energy Crops II, Organised by the Association of Applied Biologists University of York, York, UK, Contact: AAB Office c/o Horticulture Research International Wellesbourne, Warwick, CV35 9EF, UK, tel: + 44 (0) 1789 470382, fax: + 44 (0) 1789 470234, e-mail: carol.aab@hri.ac.uk Internet: <http://www.aab.org.uk>, Send offered papers and posters to: Dr. Mike Bullard, ADAS Arthur Rickwood Mepal Ely, Cambridgeshire, CB6 2BA, UK, tel: + 44 (0) 1354 692531, e-mail: Mike.Bullard@adas.co.uk
- Industrial Applications of Bioplastics, 4 –5 Feb 2002, A conference jointly organised by IENICA and Europoint, Central Science Laboratory, York YO41 1LZ, UK Contact: IENICA@cs.l.gov.uk, Sarah Hugo, Alternative Crops & Biotechnology Group Central Science Laboratory, Sand Hutton, YORK YO41 1LZ, UK, tel: + 44 (0) 1904 462259, fax: + 44 (0) 1904 462029, e-mail: s.hugo@cs.l.gov.uk. More details on <http://www.csl.gov.uk/ienica>
- 5th All-Russia Fair-Exhibition-Conference „Russian Flax 2002”, March 4-7, 2002, Vologda, Russia. Contact: CNIILKA, Moscow, Fax: +70/095 236 46 59, 237 35 45, E-mail: onti@mail.ru
- The Textile Institute's 82nd World Conference. Interest is growing for the 2002 Textile Institute's 82nd World Conference. For the first time, it will be hosted by Egypt, a country infamous for its cotton. Building and learning from previous Conferences, TI2002 is an all-encompassing event. The Speaker Programme is wide and covers the scientific and technological advances in the textile chain, as well as the economic challenges the textile industry faces from globalisation. 105 papers have been confirmed for the parallel sessions; amongst them three are from the Poznan Institute of Natural Fibres, presented by Dr. Zdzislaw Czaplicki, Dr. Katarzyna Schmidt-Przewoźna, Prof. R. Kozłowski, M. Zimniewska and M. Rawluk. The Poster Display also welcomes two submissions from the Institute, by M. Zimniewska, H. Witmanowski, R. Kozłowski, and J. Paluszak, and Natalia Sedelnik. The international Trade Exhibition is attracting companies interested in both industry developments and securing new business links with the domestic market.

To stimulate networking in a relaxed atmosphere, a truly Egyptian social programme has been designed where music, dancing and food will be in abundance as we flow through Conference week. All this, combined with the daily and post-Conference tours will give everyone lasting memories of their Egyptian travels. The Conference website contains all current information, including the Speaker Programme and Registration Brochure. Delegates can use the online registration facility to secure their place in the most exciting gathering of textile professionals in 2002.

Come to Egypt, be an integral part of this prestigious event and witness the future of textiles. Website URL www.ti2002.com, Information info@ti2002.com

- The International Textile, Clothing & Design Conference, 6th to 9th October, 2002, the Faculty of Textile Technology, University of Zagreb, Dubrovnik, Croatia. Contact person: Prof. Zvonko Dragcevic: e-mail: zvonko.dragcevic@zagreb.tekstil.hr
- 3-5 Feb 2002 INDUSTRIAL APPLICATIONS OF BIOPLASTICS. A conference jointly organised by IENICA and Europoint Central Science Laboratory, York YO41 1LZ UK4: ienica@cs.l.gov.uk, Mrs T. Lopes, Programme Manager, tel: + 31 (0) 71-523 1391, fax: + 31 (0) 71-523 1386 e-mail: lopes@biotop.demon.nl, Conference details on page 21.
- 3-5 April 2002 The Second International Symposium on Biotechnology in Textiles. The Georgia Centre for Continuing Education The University of Georgia, Athens, Georgia, USA, Web site: www.intb.org, www.fcs.uga.edu/tmi
- 24 - 26 April 2002 The International Congress & Trade Show Green-Tech 2002 (for more details see page 21)
- 4-8 June 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@cci.unipi.it
- 17-21 June 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
- The Second International Conference on Sustainable Agriculture for Food, Energy and Industry, September 8-13, 2002, Institute of Botany, Chinese Academy of Sciences, Beijing, China.

Conferences on composites

- ◆ ACCM-3; Composites Technologies for the Future. Third Asian-Australasian Conference on Composite Materials, Auckland, New Zealand, 31 January-02 February 2002. Contact: e-mail: mt.millet@auckland.ac.nz and info: www.cce.auckland.ac.nz/accm

- ♦ The Sixth International Conference on Flow Processes in Composite Materials (FPCM-6), 4-5 February 2002, www.cce.auckland.ac.nz/accm
- ♦ 4th International Wood and Natural Composites Symposium, April 10-11, 2002, Kassel, Germany. Contact: specht@uni-kassel.de, web: <http://www.kutech-kassel.de>
- ♦ MODEST 2002. 2nd International conference on Polymer Modification, Degradation and Stabilisation. 30 June – 4 July 2002, Budapest, Hungary. Contact: E-mail: modest@mail.bme.hu, <http://www.bme.hu/modest>
- ♦ Ninth International Conference On Composites Engineering, ICCE/9 San Diego, USA, July 1-6, 2002
Contact: Prof. Dr. David Hui, USA, e-mail: dhui@uno.edu, <http://www.uno.edu/~enr/composite>
- ♦ Fourth International Symposium on Natural Polymers and Composites – ISNaPol 20 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 informations will be at the homepage (<http://www.cnpdia.embrapa.br/ISNAPOL2002.html>)



STATISTICAL DATA ON FLAX

FLAX CULTIVATED AREA [ha]

Fiber Flax

The leading world producers of fiber flax are France, Belgium, the Netherlands, UK and China. But in 2000 significant cultivated areas in Spain (13,895 ha), in Russia (108,100 ha), and in Belarus (81,800 ha) were noticed. In 2001 in the European Union about 88.800 hectares were sown with the purpose of being processed in the traditional textile industry. Compared with the harvest 2000, this area represents an increase of 22%. Fiber flax is rarely cultivated in the USA, but linseed cultivated area reached 154,5000 ha (380,000 acres) in 1999 there. Brazil and India are processors of imported 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	13300*	*16900
BULGARIA	300	200	***58	***58	143	300	
CHINA	***94320	***101000	***101000	***101000	249,581		
CZECH REPUBLIC	7300	2155	4117	6348	15,687	6302-linseed; 2240-fibre flax	
DENMARK	200	*57	*44	11	27	*45	*19
EGYPT**	9676	8714	14000	14500	25,831		
ESTONIA	°	200	***323	115		240	
FINLAND	490	944	613	850	2,100	*1067	*405
FRANCE	44556*	45096	*43708	*49129	121,403	*55680	*66561
GERMANY	4500	*1362	*416	*570	1,409	402*	*297
IRELAND		42	1*	*0	0		
LATVIA	1240	1500	***2200	***2000	5,436	300-linseed; 1600-fibre flax	
LITHUANIA	5600	6100	6500	8600	21,251	8600	
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	3810*	
RUSSIA	153460	113860	107340	103610	256,032	108100	
SPAIN	44000	*49045	*87727	*122400	302,463	*13895	*215
SWEDEN	°	*47	*320	*1327	3279	*21	*54
UKRAINE	54500	39975	31200	***21900	54,117	22400	
UNITED KINGDOM	20500	*19080	*16700	*14000	34,595	*12089	*4430

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>

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">wasted parts of the straw; dew retted price: up to 30,99 EURO/tonnewasted parts of the straw price: 37,18 EURO/tonneby-products from deseeding price: 24,79 EURO/tonneshort scutched fibre wastes: up to 99,16 EURO/tonneshives used for particleboard production: 14,87-37,18			

Note: more statistical details about flax and industrial hemp have been presented in all previous issues of the bulletin. The entire set had to be up-dated and will be presented in the December issue of the bulletin.

FUTURE PLANS

2002

1. Meeting of the Breeding, Cultivation and Plant Genetic Resources Working Group WG/1, September 2002, Bosnia and Herzegovina, Republic of Srpska. Written acceptance of the Ministry of Agriculture of the Republic.
2. 2nd Annual Workshop of COST Action 847: Textile Quality and Biotechnology, Italy, Como, 9-11.10.2002 (to focus on industrial and educational aspects to the textile industry)
3. International Conference on Modern Processing including Enzymatic Processing of Lignocellulosic Biomass and Application of Lignocellulosic Raw Materials. The venue proposed earlier was National Research Centre, Cairo, Egypt. The event in Egypt is not confirmed yet; it is necessary to gain the acceptance of the relevant authorities of NRC. Please, note that Prof. Dr. Gianpietro Venturi on behalf of the staff expressed the readiness to hold this conference in Bologna, Italy.

Additionally the Network Coordinator proposes to co-organize with the Network involvement the event: Industrial Applications of Bioplastics, 4-5 Feb 2002, a conference jointly organised by IENICA (see page 21) Europoint, at Central Science Laboratory, York, UK.

REMINDER

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

Attention

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

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Web page of the Network: http://www.fao.org/regional/europe/escorena/fla_crop.html

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