



Join the Green Evolution

University of Applied Sciences



**VAN HALL
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Marketing and Sales Concept for Forage and Turf Grasses in China for Euro Grass B.V

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SUMMARY

Euro Grass B.V is one of the biggest grass breeding, production and sales companies in Europe. Up to now it has the main activities in Europe. The grass market in China is a very big and competitive market to European companies' exporting business; thus Euro Grass B.V purposes to try to develop their products into East Asia, particularly focus on Chinese Market. The products of Euro Grass are all the cool season grass seeds and it was found that the most beneficial regions are in the north area of China. According to field interviews in China and the import statistics, a good overview to the overall overview to the Chinese grass seeds market was achieved. Most of the imported seeds of the plant species have a stable increase since 2005, according the import statistics and the verbal Most of the imported seeds of the plant species have a stable increase since 2005, according the import statistics and the verbal statements of the domestic suppliers in China. Overall the imported forage grass seeds are covering only 10 % of the total forage grass market. And the rest of forage seeds are always offered by domestic suppliers. In other word, the demands of forage grass seeds are much less than turf grass seeds.

From the interview of Chinese clients and the overseas' suppliers who export cool season grass seeds to China for several years, it was found that China still has a huge demands of turf grass seeds and high demands in quality forage grass seeds. More and more overseas suppliers are exporting their products into China. Chinese customers became in the meantime much stronger and price-sensitive in choosing domestic suppliers and goods. The loyalty of the suppliers is low. Euro Grass B.V. has strong skills with good quality production as well as a good global and matured business operation. Meanwhile, China is a developing its market in grass seeds market , but still there are certain risks behind getting access to the Chinese market as well as good opportunities for Euro Grass B.V..

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1 INTRODUCTION

There is the general description of the thesis project in this chapter. It mainly introduces the project's background, describes company information and gives SWOT analysis to clarify the situation of the company. Research proposal and route map are contained into this chapter.

1.1 Background

Euro Grass B.V is one of the leading grass breeding, production and sales companies in Europe. Further to their core activities in their home markets Germany, the Netherland and Denmark, Euro Grass B.V (further on called "EG") is working all over Europe as well as outside of Europe. Up to now Euro Grass B.V has its main activities in Europe: The grass markets in East of Asia were up to now not in the core activities of EG. The grass market in China is a very interesting and well promising market to companies' rounds the world; also Euro Grass B.V purposes to try to develop their products into East Asia, particularly focus on Chinese Market.

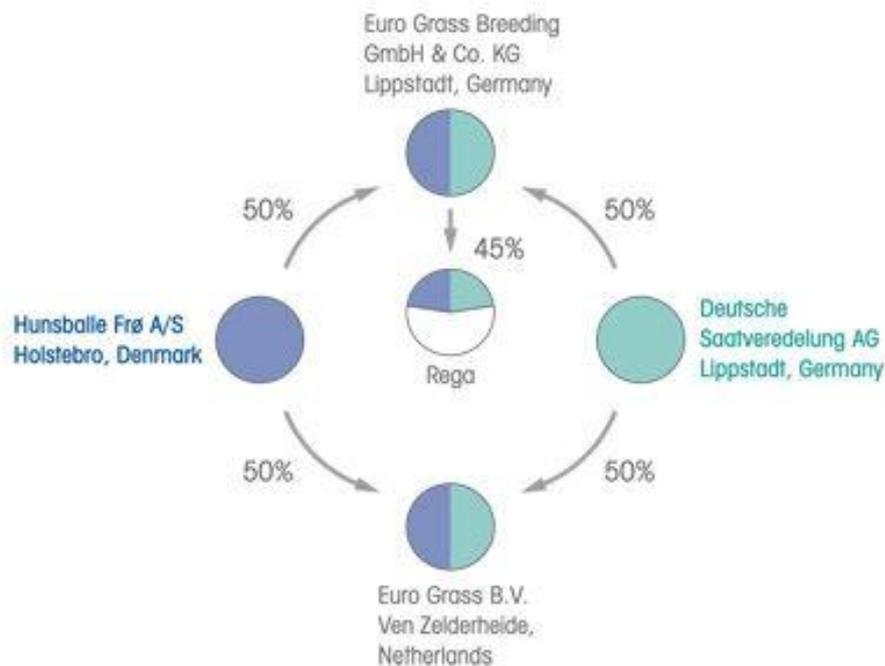
1.2 Euro Grass B.V. Organization

Euro Grass B.V. - Join the Green Evolution – is not only a simple "appeal", they consider this commitment a natural development to establish their self as strong partners in the international markets.

A powerful breeding network has been set up on a large European scale from EG. The structure of the EG organization was established in 2002. At that time the shares of the Dutch breeding and production company Zelder B.V. were acquired by Deutsche Saatveredelung AG (DSV), Germany and Hunsballe Fro A/S, Denmark who had already been in close co-operation for almost three decades.

By combining the strengths of these partners a powerful breeding network as well as the seed multiplication was set up on a large European scale. EG stands for efficient structures in

breeding, production, sales, logistic and service to meet the customers' requirements for worldwide marketing and supply.



1.3 SWOT analysis for Euro Grass B.V.

1.3.1 Strengths

Quality leadership

The portfolio of Euro Grass B.V. in Europe consists of a broad range of forage and turf plant species, with years of experiences in grass seeds breeding, and seed production. It has already built up a good reputation for high quality and with yields in seed production. Quality leadership pattern allows its grass species to entry the world with constantly high quality.

EG works on high level to ensure good germination and purity of the seed. All seed labs of EG are working according ISTA regulations.

Reliability

The performance of the EG Breeding varieties, the efficiency and the quality of the production as well as the skills of the EG logistic department build a strong basis for the sales department. The sales department consists of area managers who are responsible for the customers in numerous countries. Due to the high level of responsibility concerning customer satisfaction the area managers take decisions in a fast, sustainable and easy way. In addition, they are an important part of the EG production planning and have a strong influence on the product development. The demands of the customer have a significant impact to the development of the products of EG. Offering outstanding products in combination with excellent service EG gives added value to its customers.

Stable development after financial crisis

Due to the financial crisis in Europe since 2008 till now, EG has suffered from the economic damage and begun much stronger in the last year. The company still has stable benefits from business trade. Some other companies or the countries have been destroyed by the financial storm fairly serious. Out of these reasons EG has a good opportunity to develop their market share in some fresh places such as China.

1.3.2 Weakness

No business experience in China

EG never shared any marketing development in China up to now, also never had business with Chinese customers before. Therefore, based on this point, compare with the other overseas enterprises, exporting to China, EG has very little knowledge of the market conditions of China. An approach of EG in China has to be on the long run.

1.3.3 Opportunity

Chinese grass seeds market development

Chinese grass seeds industry began to develop since 1980s and still not quite matured and developed well now, the whole industry grows and becomes healthy than before. It offers much larger space for different commercial field of enterprises already or wants to set up their business into China. In general this means that China could not support the good quality turf grass seeds by domestic and still needs the very high quality forage grass seeds in few years. This should be a good chance for EG to search and develop.

1.3.4 Threat

China gave good development & less demands in future

Although the demands of grass seeds have an increase trend in Chinese market in recent years, it is still questionable how stable the development in China and how high the demanded in the future could be. Chinese grass industry is developing very fast and try to use their domestic seeds to support the customers' requirements later. Although the economic aim still needs several years to achieve, but the trend has already happened in China.

1.4 Research objectives

Developing of a Marketing and Sales Concept for China for Turf & Forage Grasses of Euro Grass B.V.

1st Sub-objective:

To analysis the current situation of whole sale Turf & Forage grass market in China

2nd Sub-objective:

To identify the most adequate target market area in China which focus on Turf & Forage grass

3rd Sub-objective:

To develop a Marketing and Sales Concept for Turf & Forage Grass

1.4.1 Research Questions

Main Question:

What is the concept of Euro Grass B.V. for the development of the forage and turf grass in the Chinese grass market.

Sub Questions:

1. Where are the most adequate target market regions in China which focus on Turf & Forage grass?
2. What does the supply chain look like in Chinese turf & forage grass market?
3. What kinds of business opportunities are profitable to develop in the future in China?

1.4.2 Methodology

The process is to divide the whole process into 3 stages: company information, desk research and field research.

Company information

In this stage, there are information gathered from the company and other organizations. The company webpage searching and people interviewing can be done in this period. The time should be limited before 5th of March.

Desk research

This part of research is mainly to get parts of report and statistics from the scientific and commercial people who work in grass field in China. They are interviewed on to investigate the current situation in Chinese grass market and the most adequate region for grass exporting into China. According to this process, Diamond advantages and PEST analysis should be considered to use during the interview and thinking, but it is not necessary to write with those tools. The time should be ended before middle of March.

Field research

As in the last stage, field research needs to be paid much time and attention to finish. It

generally costs more than one month to finish, also it is necessary to go back to China to solve the detail interview and investigation.

The rest of the questions need to be solved in this stage in China, if there have different regions are possible to develop the products exporting, the field research probably to do in these regions also. The more details can be adjusted and discussed later. For this study, questionnaire and people interview should be used and the question list needs to discuss with manager in Euro Grass B.V.

Time should be limited before the end of May.

1.4.3 Timetable

Feb ~ middle of Mar	Company Information Desk Research	Company description Products Current situation Adequate region in China	The Netherlands
Middle of Mar ~ Apr	Field Research	Detail Supply Chain Competitors Potential Target Market Business Opportunity	China
May ~ Jun	Data Working Presentation	Finish Report Presentation	The Netherlands

1.5 Route map

This is the structure description of report. Project's background, company information and research objectives are contained in this chapter. Chapter 2 shows the desk research of Chinese grass seeds industry and the adequate regions in China for EG development. In chapter 3, the reflection of Chinese grass seeds market analysis and export requirements to China are presented. Last chapter gives recommendation for exporting into Chinese grass seeds market.

2 CURRENT GRASS SEEDS DEVELOPMENT

This chapter describes the structure of Chinese grasslands and development of grass seeds industry from establishment of new China till now. It is in order to know the state of Chinese grass seeds industry development and find out the most adequate regions according to those different factors.

2.1 Grasslands' developing situation

Till the end of 2005, 1.3 million ha grass planting filed (grasslands with grass growing), 0.45 million ha grass seeds filed were sown in China and the yield of grass seeds production around 0.11 million ton. But grasslands ecosystem was deteriorated continually in recent years.

Chinese government never paid so much attention to the grasslands' control and management before; but even with this high attention the grasslands degraded further ion with the speed of 262 thousands ha per year.

Source from China grass industry development and strategy (2006).

2.1.1 Grass history and development

In China thousands of years' culture, there has been continuously recorded on the grass, while China is one of the earliest countries in the world's developed turf grass industry. In modern times, the new China was founded since 1949, a series of culture revolution has happened, the grass industry was terribly harmed and resulted in a stagnation of grass research. After this Cultural Revolution, in 1983, China established the institute of Grassland and organized experts to carry out the academic exchanges and promote Chinese turf industry in that period. In 1985, the lawn subject has been incorporated into higher education learning program. In 1990, Gansu Grassland Ecological Research Institute completed the 11th Asian Games, the lawn of Beijing Olympic track and field center. It expressed the lawn industry had already

close to the development of international standards step, the lawn has become an important industry now. But overall, compared to developed countries, China still lags behind in this field.

2.1.2 Economical development of grass industry

Comparing with other agricultural industries, grass industry was not considered so much by Chinese government in past years. As China is a developing country and even developing so fast, it has began increase more demands of good quality grass in this field every year. But the low level development of grass industry in China could not support its requirement; there still have a lot of problems within it, such as the low quality of grass, less modern technical machines even poor money to do the grass breeding research. Because of these factors, there were not so many huge structured, intensive and modern grass seeds companies to compete with the foreign grass seeds companies. The average yield of grass seeds (almost all forage and little bit turf grass) only has 100-300 kilo/ha per year, but American can exceed 1120 kilo/ha per year. Even till now, there isn't a detail strategy or any law rules to manage and develop grass economical industry in China. But Chinese government already recognized this point and began to develop grass industry as quick and healthy as possible.

2.1.3 Domestic Seeds production

China has a very long history of grass seed production, but seed supply is still a bottleneck for grass and forage production because of the weak breeding work on seed yields and harvest technology. The output of commercial seed production is very low. China can only produce seeds of *Medicago sativa*, *Astragalus huangheensis*, *Melilotus alba*, *Vicia sativa*, *Vicia villosa*, *Leymus chinensis*, *Puccinellia tenuiflora*, *Puccinellia chinampoensis*, *Elymus sibiricus*, *Elymus nutans*, *Elymus dahuricus*, and *Sorghum sudanense* to a certain degree. The seeds of *Astragalus sinicus* are produced and used by farmers themselves, but there are no commercial seeds in China due to the small production scale. The situation of *Lolium multiflorum* is similar to *Astragalus sinicus*, the vigour of harvested seeds with drying capacity by farmers is quite low since humid weather and the local government encouraged farmers to use the seeds

produced in drier areas.

Seeds of other forages grasses are not produced due to lack of production technique (*Lolium perenne*, *Dactylis glomerata*, *Festuca arundinacea*, *Trifolium repens*, *Trifolium pratense*, *Poa pratensis*, *Festuca elata*, *Festuca capillata* (*Festuca capillares*, *Agrostis stolonifera*). The mentioned grasses and legumes are mainly imported. . Although large amounts of seed of *Zoysia japonica* and *Cyanodon dactylon* are produced in China; sometimes these seeds are also exported to the world market. For further selections and mechanically purification abroad capacities are used.

2.2 Structure of Chinese grasslands

There are three main grassland areas in China are focus on cool-season grass growing. They contained nature grasslands and human planting grasslands. The detail grasslands area square of each province present in the appendix 1.

2.2.1 Introduction of Chinese Agricultural Land structure

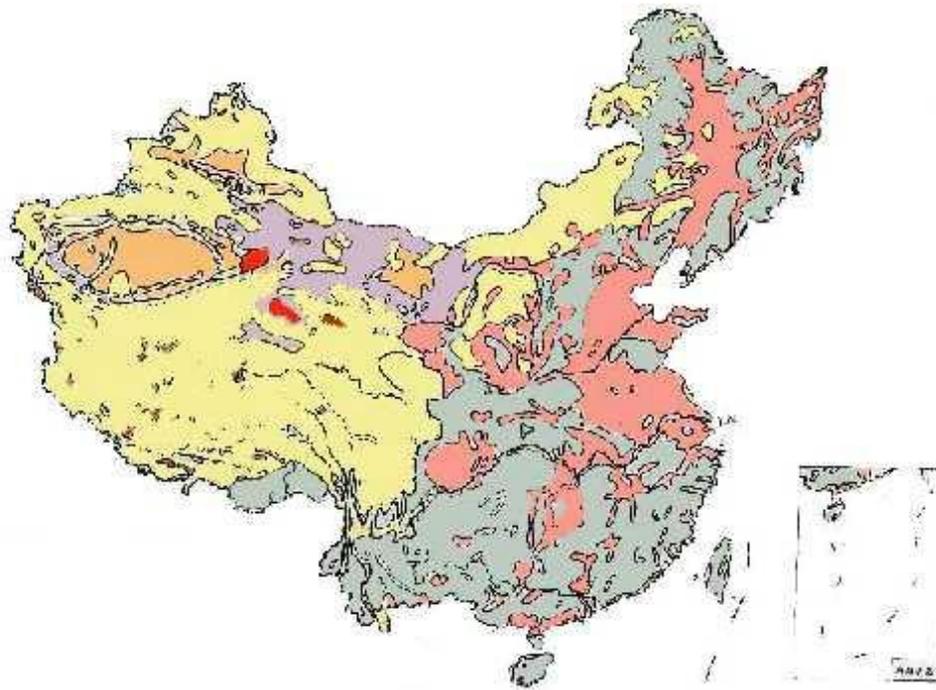
Before search the statistics and the structure of Chinese grasslands, the Whole Chinese land structure should be mentioned in it, because it would be easier to get the deep impression to the structure of China.

Agricultural land includes cultivated land, forests, inland water, grassland and others. Cultivated land and forests are mainly in the east and centre, and grassland in the west. The east is dominated by farming and the west by grassland husbandry. Inner Mongolia, Xinjiang, Tibet, Qinghai, Sichuan and Gansu are the six main pastoral areas.

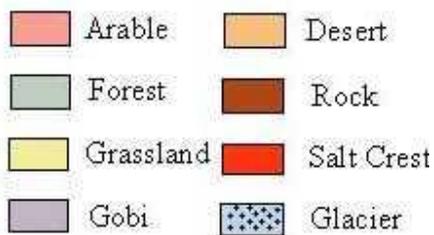
Table 1 shows the area hectors of Agricultural land of China, and the graph 1 shows the picture of the distribution of different characteristics of Chinese agricultural land use.

Land Use	Area (1000 ha)	Percentage of Total
Cultivated Land	120,040	13.53
Forest	158,940	16.56
Inland Water	17,470	1.82
Grassland	400,000	41.67
Useable Grassland	313,330	32.64
Others	253,550	26.41

Table 1: Agricultural Land Use Characteristics
Source: National Bureau of Statistics (2000a)



Land Use of China 中国土地用途土地覆盖图



Graph 1: Agricultural Land Use Characteristics

2.2.1 North arid and semi-arid grasslands area

Current situation

This area consists of Inner Mongolia, Xinjiang, Gansu, Ningxia, Shaanxi, Jilin, Heilongjiang, Shanxi, Liaoning, Hebei provinces and so on. It is a very important ecosystem protective place. There has grasslands 159.9486 million ha total, but only 132.4458 million ha can be used. Till the end of 2005, it kept the human planting grasslands around 8.02 million ha, improving grasslands occupies 7.08 million ha, the field of grass seeds' production had 0.3 million ha and the yield of grass seeds exceeded 73 thousands ton.

The climate of this area is drought and little rain. The annual precipitation is always lower than 400 mm and uneven distributed. Even some areas' rain fall is lower than 50 mm. in this area; it is cold and long period in cool season and warm and dry in warm season. In other word, this grassland is particularly the desertification and very fragility in its ecosystem.

Objectives and tasks:

Till the year of 2020, there will have 13 million ha grasslands by human planting and improving grasslands arrive to 30.5 million ha. Good quality seeds breeding fields will have 0.54 million ha and the seeds yield exceed 202 thousands ton.

2.2.2 Qinghai-Tibet Plateau Grasslands

Current situation:

Qinghai-Tibet Plateau in China involves Tibet, Qinghai (throughout), and parts of Sichuan, Gansu and Yunnan. This area is the birth land of Brahmaputra, Yangtze River, Yellow River and other rivers, is the core area of soil and water conservation in China. It has the Chinese nation "water tower" title also one of the most biologically diverse areas in the world. This region has 139,084,500 ha grasslands; available grassland area occupies 120,609,300 hectares. Till the end of 2005, artificial grass retained to 1.87 million hectares, 5.44 million ha grassland had improved and grass seed production was 13,000 tons.

The elevation of grasslands in this region is above 3,000 meters, the climate is cold and the frost-free time is short. Alpine grasslands are one of the most widely distributed vegetation types on the Qinghai-Tibet Plateau, the ecosystem is extremely fragile and grass growing season is short also with low yield of grass production.

Objectives and tasks:

To 2020, artificial grass area is needed to retain 3 million hectares; grassland improvement area occupies 18 million hectares; forage breeding area is 90,000 ha and grass seed production reached 34,000 tons.

2.2.3 Northeast & north humid and sub-humid grasslands

Current situation:

This area is primarily located in Northeast China and North China which involved in Heilongjiang, Hebei, Henan, Jilin, Shanxi, Liaoning, Shaanxi, Shandong, Beijing and Tianjin in 10 provinces (municipalities). There is 29,608,200 hectares grassland totally and the area that can be used is 25,461,200 hectares, the improved grassland is 2.04 million hectares. Grass farming area is 3.1 million hectares and grass seed production is nearly 8,000 tons per year.

This area has good water and temperature conditions; the annual precipitation is generally over 400 mm, it is the high vegetation coverage of natural grassland and better quality, high yield areas in China, also it is a more developed regions for animal husbandry, the development of human types Grass and grass products processing industry has great potential.

Objectives and tasks:

Till 2020, the area of artificial grass will be retained up to 800 million hectares; the improved grassland area will be reached 600 million hectares. Forage breeding area is increased into 50,000 ha and grass seed production will be reached 15,000 tons.

2.3 Lawn type in different regions

The different regions in China can grow different species of grass seeds. The table 2 shows the different lawn type in China and keeps their provinces include into the region and presents

the species of grass seeds which EG can support. In this table, south China and HKMacTW don't show any record with cool-season grass because these parts' climate are quite warm. They are growing warm-season species grass fairly popular.

north China	Beijing, Tianjin, Hebei, Inner mongolia, Shanxi, Shandong	Buchloedectyloides , Zoysia , Red fescue, Fescue, Festuca arundinacea, Poa nemoralis, Poa pratensis L, Poa Compressa, Agrostis alba L., Agrostis stolonifera
east China	Shanghai, Jiangsu, Anhui, Zhejiang	Poa pratensis L, Festuca ssp. ,Agrostis alba L,Agrostis stolonifera
south China	Guangxi, Guangdong, Fujian, Hainan	not recorded with cool-season grass
middle of China	Henan, Hubei, Hunan, Jiangxi	Poa pratensis L, Festuca ssp. Agrostis alba L,Agrostis stolonifera
northeast China	Heilongjiang, Jilin, Liangning	Buchloedectyloides, Zoysia, Festuca ssp.,Poa nemoralis, Poa pratensis L, Poa Compressa, Agrostis stolonifera,
northwest China	Xinjiang, Qinghai, Gansu, Ningxia, Shaanxi	Buchloedectyloides , Zoysia , Festuca ssp. Especially Festuca arundinacea, Poa nemoralis, Poa pratensis L, Poa Compressa, Agrostis stolonifera, Agrostis alba L.
southwest China	Tibet, Sichuan, Yunnan, Guizhou, Chongqing	Poa pratensis L, Festuca ssp., Agrostis alba L, Perennial Ryegraas, Zoysia sinica Hance
HKMacTW	Taiwan, Hongkong, Macao	not recorded with cool-season grass

Table 2: lawn plants in different regions in China

As for the lawn type grass, it is much popular in the first-line cities and second-tier cities. In other word, the Chinese second-tier cities could show good investment prospects. But lots of grasses in China need high maintenance and normally, every square meter costs more than 0.05 cents Euro in China, thus, the most important factors for us is dealing with this problem.

2.4 Colour type

With the different requirements from the customers in China, there are all kinds of colour demands within it particular in the first-second line cities. Therefore, it is not a problem of distinction for the import to China.

2.5 Influencing factors of turf market

Economic Development Zone and Hi-Tech Park are developing rapidly. According to regulations, the construction enterprises in these areas usually have to come up with 25% - 30% of the land for environmental equalization.

Airport, high speed road and other infrastructure projects will be completed one after another. In recent years, main cities in China launched new expansion of the airport's high tide, need 300 thousand square meters for each airport over the lawn, the lawn industry is undoubtedly a big boost. From the incomplete statistics, the total length of expressways in China has built 10,000 km. Shandong Province, which has grown to 3,200 km highway, ranked first in the country. By the year 2010, China will build 12 national trunk highways, and the highway slope, the center divider and other facilities around the island, also requires a lot of lawn.

Football pitches, golf courses have a large increase in recent years, According to the statistics from golf club, there are 314 golf courses in China, and it is the second place in Asia and fifth in the world. Thus, the lawn will be required more and more in the future.

2.6 Most adequate regions in China

The portfolio of Euro Grass B.V are cool season grasses and legumes, therefore the potential area to grow these plant species is limited to certain areas in China. The most adequate climates factors are controlled by temperature: -20 °C~+35 °C, precipitation: 500mm~1200mm. In China, Beijing, Hebei, Shanxi, Shandong, Shaanxi, Liaoning, Jilin and Inner Mongolia provinces can grow cool season grass well. These provinces are located in the north of China. Parts of Qinghai and Xinjiang and the north of Henan also can plant some cool season grass.

And the most popular grass species are smooth-stalked meadow grass, tall fescue, alfalfa and perennial ryegrass.

3 ANALYSIS OF GRASS SEEDS MARKET

Grass seeds market in China is developing fairly fast in recent years, and there are many enterprises try to set up their business into China. This chapter is aim to find out all kinds of marketing factors influence Chinese grass seeds market for a new entry company and describe the relative information from government and Chinese customers. In this chapter, the logistics and inspection of Euro Grass to China are also mentioned.

3.1 Political strategy

Nowadays, Chinese government takes great attention to the ecosystem and the deterioration of grasslands. As one of its most important targets, ecological environment rebuilding has been covered in the west development plan by central government in 2000.

This implementation of the grass industry management is “return grazing land into grasslands plan”. This plan started from 2003 and has already improved in the West of China for several years.

After that, China began to strengthen the dominant position of grass development in whole agricultural industry, emphasis on building grass industry in ecological status. Plan as a whole, Chinese government keeps grass industry and the common development of agriculture together, because grass industry is an important part of agriculture and is also an important symbol of modern agriculture. In the implementation of large-scale farming strategy of the agricultural and rural economic development, this strategy is aim to be given the status of grass industry. According to the agricultural structure adjustment, Chinese government put into force the “planting grass fields plan”, also gave full play to the industrial chain length in grass industry, and labor-intensive features, to encourage and support farmers and herdsmen develop forage production, processing, transportation and marketing. And as for the livestock production, the government also supports the development of nutritional pasture with good nutrient grass as much as possible to play an important role in food safety.

3.2 Different overseas' suppliers

Since 1997, the first oversea supplier DLF set up a representative office in China and following, more and more foreign suppliers choose China as a main target in the world. Till now, there are already more than 7 companies export grass seeds into China even most of them have their representative office in China. These overseas occupy nearly all of the turf-seeds market and 10% of forage-seeds market.

These enterprises are:

DLF

SCOTTS

BRETT YOUNG SEEDS

AMPAC SEEDS

BARENBRUG

JACKLIN/SIMPLOT

PENNINGTON SEEDS

3.2.1 Business development example: Barenbrug in China

From the approval of China's State Administration for Industry, in 1997, Barenbrug in China was established as a subsidiary from Barenbrug Netherlands (Barenbrug Limited Beijing Representative Office, Registration No.: Beijing-based foreign enterprises No. 07019). Since 2002, the headquarters staff changed and to facilitate market development in China. They established the United States Barenbrug Limited another Beijing Representative Office. Registration No. Beijing-based foreign enterprises No. 09764. In 1999, Barenbrug established the grass seed company which the first foreign-owned enterprise in this industry in China. Legal representative is Kees bleeker, General Manager is Chen Gu from China.

Barenbrug developed into China was relatively late, in 1997 when they set up a representative office, they were not decided to sell products eagerly, but active in China for large-scale introduction of ecological study when they have identity of a legally prescribed. In that period they established 75 test points by 3-year continuous monitoring, collected a large number of

experimental data, and the aim was minimized the risk of loss of Chinese users. They designated expert (Ph.D.) responsible for this work and continued to track new products in China's performance characteristics in different eco-climatic regions. Moreover, they built a marketing network all over the country and cooperate with Chinese Academy of Sciences, Nanjing grasslands research center, Qinghai University, Beijing Academy of Agriculture and Forestry, Jiangsu Academy of Agricultural Sciences, Inner Mongolia Agricultural University and many research institutions in China for breeding and new varieties testing. To provide customers with good technical services, use technology to improve sales, is Barenbrug main features and the most important point for their brand.

3.2.2 Overviews for grass seeds market by enterprises

The Pressure and Benefits from Chinese market development in recent 5 years

The Chinese market has always been a little unpredictable. There are many factors that influence the purchasing of seeds.. There has been more and more pressure for seed companies to act like a bank for Chinese customer by provides very long and extended payment terms. For instance customers want to pay 6 months plus after receiving the product. They also seem to be very price-sensitive more than most any other region and have little loyalty to long-term suppliers. But it still seems to be a growing market no matter from the export statistics or the demands from customers in China,

Protection of the Intellectual Property – Plant Breeder Right, Patens Certain

At the current situation the intellectual property, like Plant Breeder Rights and Patens, cannot secured enough while exporting goods to China. This is a major hindering point for the increase of the activities of overseas enterprises. Domestic customers give good faith and trust to their customers.

The representative office in China

Most of the companies (DLF, SCOOTs, BARENBRUG, JACKLIN/SIMPLOT etc.) have their representative office in China especially in Beijing or the first-second line cities. They

thought that although this kind of working place is not very necessary but if their capital is allowed, the representative office would be better than without. The most popular enterprises all have their representative or branch companies in China to help them deal with the customer services and different demands from Chinese customers. The representative could help company to search more useful information in Chinese Market and notice the developing situation and update marketing strategy in this industry. Chinese customers prefer to communicate with the people who can speak and even the sales staff knows the Chinese negotiate methods more than foreigners. Chinese market doesn't have a much matured and very transparent trade, so the enterprises would like to ask for the experienced person to help them negotiate and get more and more potential customers. Some companies have no intention of setting up a sole office in China, because they have their special sales staff likes from other parts of Asia. This works well for them.

3.3 Import of turf and forage grasses to China

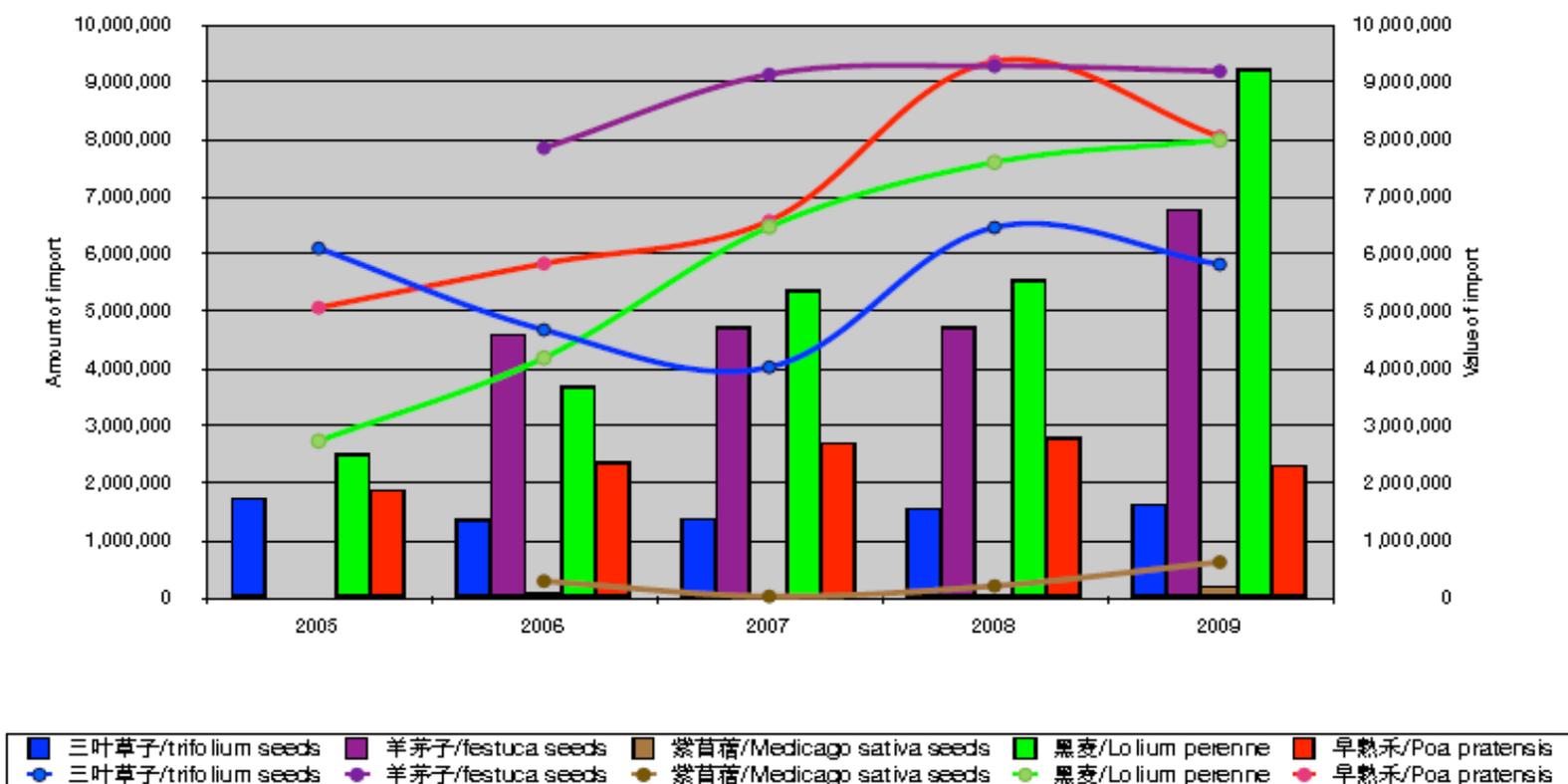
3.3.1 2005-2009 Value and volume of grass seeds import in China

Table 3 shows the volume and value of different species grass seeds import in China from 2005 to 2009. The following picture expresses it by columns and lines.

Graph 3 describes the value and volume import for different species grass seeds from 2005 till 2009 in China. The different color columns express the volume of grass seeds import with left axis. Lines show the value of grass seeds with right axis. *Trifolium* seeds are the most popular seeds for Chinese customers every year and still increases since 2006. *Festuca* ssp. seeds and *Lolium* ssp. seeds are both growing significant, *Lolium* ssp. seeds are the highest demand of all the seeds, but compare to the value, *Festuca* ssp. seeds are become stable from 2006 although the volume is still increasing. But *Lolium* ssp. seeds are relative lower. *Poa pratensis* seeds are always quite expensive. *Medicago sativa* seeds are the least demands to Chinese customers because many Chinese consumers could use the local forage seeds to support their requirements.

YEAR	kg					dollar				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
三叶草子/trifolium seeds	1,735,188	1,358,830	1,382,353	1,553,767	1,623,685	6,099,650	4,675,662	4,024,473	6,462,222	5,818,320
羊茅子/festuca seeds		4,598,476	4,722,003	4,727,747	6,777,217		7,849,703	9,133,654	9,279,000	9,190,392
紫苜蓿/Medicago sativa seeds		81,006	5,010	48,525	207,656		289,794	23,894	205,524	621,100
黑麦/Lolium perenne	2,513,788	3,688,823	5,366,658	5,542,565	9,224,953	2,734,776	4,186,740	6,471,474	7,600,644	7,985,521
早熟禾/Poa pratensis	1,885,272	2,370,724	2,699,237	2,786,293	2,309,680	5,063,370	5,832,113	6,577,722	9,359,321	8,048,166

Table 3: statistics for volume and value of grass seeds import in China 2005-2009



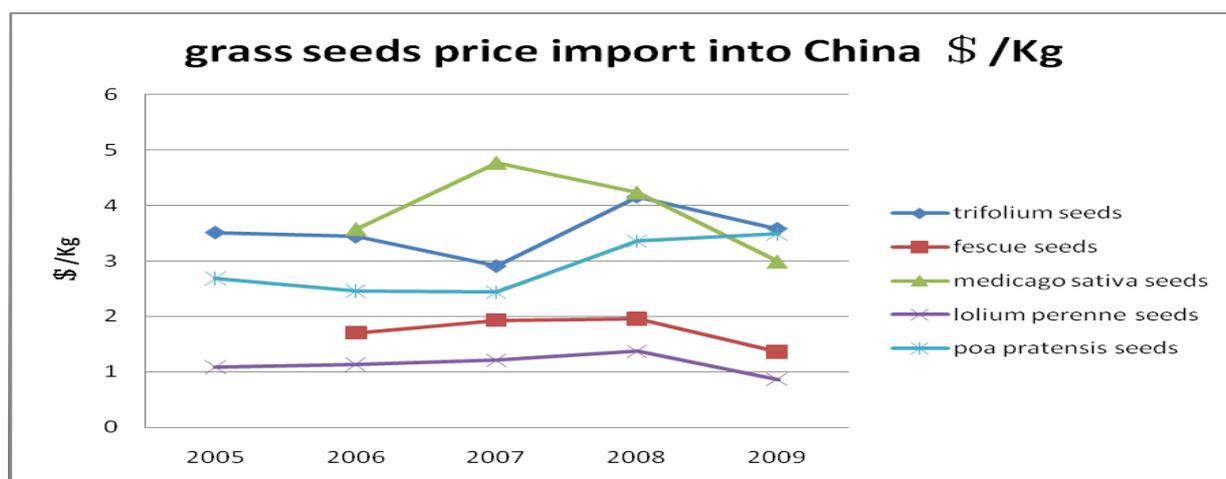
Graph 2: statistics for volume and value of grass seeds import in China 2005-2009

Both Table 2 and graph 2 Sources from the statistic searching website, the homepage of China customer house from 2005 to 2009

3.3.2 2005-2009 the price of grass seeds import in China

	2005	2006	2007	2008	2009
Trifolium ssp.	3.52	3.44	2.91	4.16	3.58
fescue seeds		1.71	1.93	1.96	1.36
medicago sativa seeds		3.58	4.77	4.24	2.99
lolium perenne seeds	1.09	1.13	1.21	1.37	0.87
poa pratensis seeds	2.69	2.46	2.44	3.36	3.48

Table 4: statistics for grass seeds prices import into China from 2005 to 2009



Graph 3: statistics for grass seeds price import into China from 2005 to 2009

Both table 3 and graph 3 Sources from the statistic searching website, the homepage of China customer house with 2005 till 2009

This picture expresses the average price of different species grass seeds from 2005 to 2009. Both *Lolium perenne* seeds and *Fescue ssp.* seeds are stable and have a little bit decrease in 2009, they all keep between 1 and 2 dollar per kilo. *Poa pratensis* seeds are increase start 2007, the price in 2005 is 2.69\$/kg but in 2009 is 3.48\$/kg. It is almost increased nearly 50%. *Trifolium* seeds and *medicago sativa* seeds are the most expensive seeds of them, even more than 4 \$/kg in these 5 years.

3.4 Technical requirements for turf grass seeds

Turf-grass seeds have a fairly demands and application in Chinese first-second cities. Even the 3rd cities also have already begun to grow up quite fast and more and more enterprises

notice these places now. Usually, when the Chinese consumer likes government or private districts participate into the landscaping, they always consider about the climate, soil and human factors. Mostly, the requirements are contained:

High temperature resistance

Drought tolerance

Strong diseases resistant

High human beings wear tolerance

Low costs for grass maintenance

The “Low costs for grass maintenance” is an important point for Chinese consumer. Because there isn't have a very modern technical skills or facilities to help with lawn protection.

3.5 Requirements of Chinese customers

Chinese clients are very price-sensitive while they are importing grass seed. Competitive price are very important part for their requirements. As for this point, the negotiation between suppliers and customers has to be done very carefully.

Most Chinese customers like to cooperate with the different suppliers, which have different species and varieties with different standards.

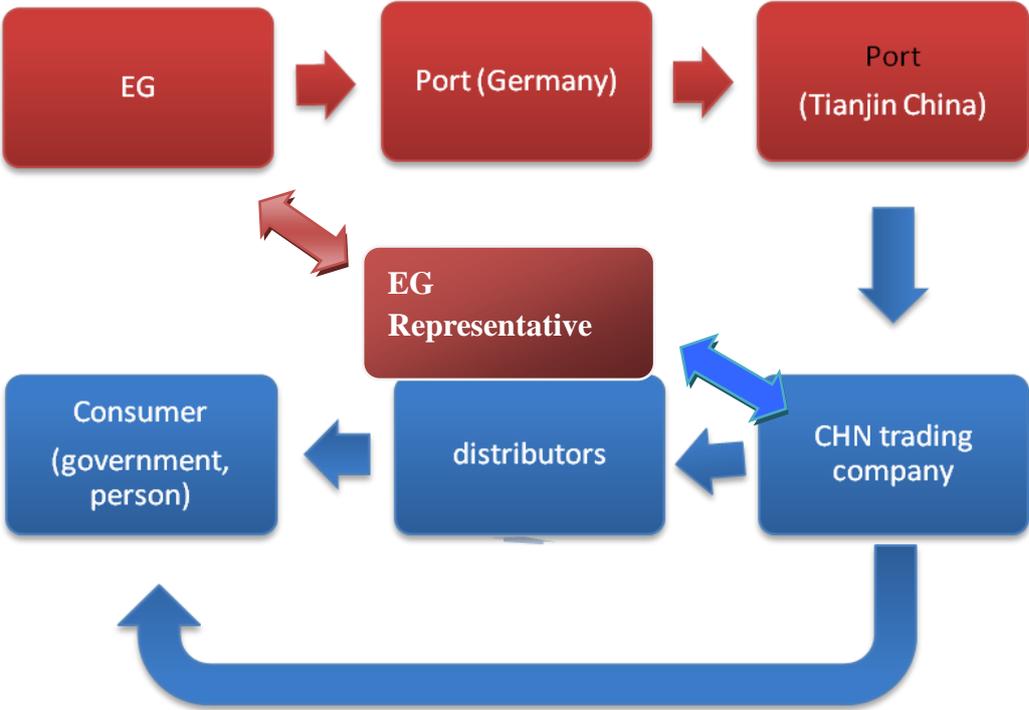
Chinese customers always pay for the products after the goods arrive to China for 30 to 90 days. The payment currency is USD.

Chinese customers hope that the suppliers have a good tracking service. Having an own company or representative in China, allows an easy communication and to absorb the fresh information.

The seeds are be allowed to be sold in China when the seeds got prior a permit from the Ministry of Agriculture for import, and the restrictions are followed in the inspection part in this report and have the quarantine certification and exporting. The certifications need to apply in ministry of Agriculture and the processes of exporting are better to ask for agency to deal.

3.6 Logistic Concept for Import to China

Graph 4 shows the procedure of logistic from EG transport products till Chinese consumer purchasing. Red parts show the products for EG’s responsibility. The blue parts are mainly in charge of China.



Graph 4: logistic procedure for EG exporting into China

When Euro Grass gets the order from Chinese customers, Euro Grass should transport the products to the port and ask for a logistic company to help them send the seeds to Chinese port which in Tianjin the most popular and very common port for grass seeds export-import. For the whole distance, EG will pay for the fees and when the products arrive to the port in China (parity CIF Chinese port), the Chinese customers will go there to pick up the seeds and pay for EG by different ways, the most common payments are **D/P** (Documents against Payment, net Cash Against Documents CAD), **D/A** (Days after Acceptance, Payment time), **T/T** (Telegraphic Transfer). After that, Chinese trading companies would sell those seeds to distributors in different provinces (the big trading companies are always in Beijing, the capital

of China). Finally, the distributors would sell or carry on the bid item to the final consumer in China which always are individual or the relative government department. Meanwhile, the trading company also can as a dealer to act for products and sell to consumers within their marketing network. If Euro Grass has representative office in China, Chinese clients could contact the representative office directly and make contract with Euro Grass head office in Germany. Representative office could help the customers more easy to know the products and ask for any requirements, also convenient to communicate with foreign.



These two pictures show the port of China (names Tianjin XINGANG) where the grass seeds transport into and the Chinese customers pick up them. And this port is quite near the capital of China-Beijing. Most of the trading companies are in Beijing.

3.7 Inspection

As for the inspection part, the sample quarantine should be done and give promising certification by Ministry of Agriculture, the National Metrology certified legal professional testing organization. In addition, the export application part, Company always asks for the Chinese domestic export-import agency to help them deal with all promising certification with each procedure and finish all the process in a certain days. And the payment is depended on the products and time.

Because EG is the first time to export into China, so it difficult to perform this requirement from EG solely, due to a high risk chance on failures.

3.7.1 Notes sample

This is the process and the notice parts for the simple quarantine, each step needs to be mentioned and the people who submit sample should following them as clear as possible. After the quarantine finish by tester, the quarantine certification would be allowed to use by agreement of Ministry of Agriculture.

1. Ministry of Agriculture forage and turf grass seed Quality Supervision and Testing Center (Beijing) is authorized by the Ministry of Agriculture, the National Metrology certified legal professional testing organization.
2. The people who submit sample should discuss with the staff who receive samples in the designated locations, not directly send them to the inspectors. Sample should be representative of the quality status of the seed lot, the quality inspection center only responsible for the sample's quality.
3. Sample submitted should be able to meet the minimum weight of seeds in different sizes with requirements GB/T2930.1-2001.
4. If sample seeds are expensive that lead to could not meet the weight requirements, sample collection personnel should explain the situation in advance.
5. Seed must be packaged in seal (or seal performance) bags, containers, and verify the name

and the required sample test items on its bags. Seeds should be instructed to the quality inspection center if have been dealt with treatment have been dealt with treatment.

6. Fill out the "sample registration form," as clear as possible, part of unknown can fill out the "unknown" or listen to sample members' request, the inaccuracies should be own risk.

7. Centre is non-profit units, every sample pays fees according to state inspection spread list, and expedited inspection fee would be increased by 50%. According to regulations, the test sample should be paid first.

8. If any inspection reports for sample test results were on the objections, please put forward within 15 days since the date of receipt within 15 days (postmark date), Later would not be accepted.

3.7.2 Standard items

1. Take sampling GB/T2930.1-2001; international seed testing (2003)
2. Purity analysis GB/T2930.2-2001; international seed testing (2003)
3. The other seeds calculation GB/T2930.3-2001; international seed testing (2003)
4. Germination test GB/T2930.4-2001; international seed testing (2003)
5. Viability Test GB/T2930.5-2001; the international seed testing (2003)
6. Health testing GB/T2930.6-2001; international seed testing (2003)
7. Species and variety identification GB/T2930.7-2001; international seed testing (2003)
8. Moisture determination GB/T2930.8-2001; international seed testing (2003)
9. Weight determination GB/T2930.9-2001; international seed testing (2003)
10. Coated seeds determination GB/T2930.10-2001; international seed testing (2003)

11. Vitality testing ISTA "Vigor Manual" (2003)

3.7.3 Main grass seeds test centers:

Ministry of Agriculture, National Grassland Quality Supervision and Testing Center (Beijing)

Ministry of Agriculture, forage and turf grass seed Quality Supervision and Testing Center (Beijing, Hohhot, Lanzhou, and Urumqi)

3.8 Risks for company entering

3.8.1 Benefits to Chinese customers in Grass seeds industry

Because of the big competition of more and more companies entering the Chinese market , the benefits becomes less than before. According to news from Chongqing agriculture government, the benefits were decrease from 100% in 1990s till 15%-20% in 2000s for the Chinese grass seeds companies. When the grass seeds industry in China was at its beginning time, some grass seeds companies had the chance to open the market and could achieve a good market access. At that time, these companies could achieve a good profit from this grass seeds market. After that, more and more companies found this opportunity and join into the grass seeds business. The seeds price began to decrease and not stable during that period. The benefits also began to decrease and some small companies did suffer from the high competition in this market and chose give up the business.

3.8.2 Limitation of sports medium construction increasing

Chinese government began to limit the construction of golf course and urban plaza. Although Chinese government support sports activity in the cities and ask more and more space to be built for sports mediums, but golf is still an unpopular and expensive sport in China. Therefore, not so many people could enjoy this game compare with table tennis, badminton

even football in their social life. But as for the developing second-line cities, this kind of structures still have a high trend of increases in recent years.

3.8.3 Payment time culture

When a company begins to export grass seeds into China at first, the payment time from Chinese customers is always a risk to the supplier, thus the company needs to think about it seriously. Normally, Chinese customers would like to pay for the products between 30 to 90 days even more than half a year, of course, this kind of phenomenon is not good for supplier. But as a new supplier which starts to develop Chinese grass seeds market, this point must be negotiated very carefully before making contract.

3.8.4 Share Market

Till now, there are already more than 7 enterprises developed their grass seeds market into China and occupied most of the turf seeds market and parts of forage seeds market. They have more than 10 years experiences in China and make good faith and trust to their customers to keep Stable Corporation between them.

3.8.5 Illegal use of Germplasm & Intellectual property

During the interview of enterprises, they expressed that the seeds copy things could happen occasionally. They thought this phenomenon coursed because the immature grass seeds market in China. Actually, Chinese grass market only started since 1980s, and some unscrupulous traders did the illegal things for their benefits. As for this point, Chinese government has needs to responsible for it, thus, they noticed these bad points and began to enhance the power of law and limit or provide all the things happen, but it still needs time if we want to sweep them thoroughness.

3.8.6 Stronger power for bargaining by Chinese customers

Since more and more overseas' enterprises export their products into China with same level of quality and global price, Chinese customers became much stronger in the bargaining skills when they choose suppliers and purchasing. They have more choice to looking for their suppliers and give less loyalty to them because of the different promotion from the suppliers each time. Although the export grass seeds price are quite higher than the domestically produced grass seed, Chinese customers have to buy the import seeds, because the benefits for overseas produced seeds are higher. It can be expected that the domestic prices will rise and/or the imported grass seed prices will decrease in comparison to the developments in the past 10 years. The prices are almost kept on a stable level even cheaper sometimes.

3.8.7 Barrier of the entry of Euro Grass

EG has strong skills in excellent quality grass seeds to market, but the quality demands of China are not quite high and all the time necessary. Out of this reason other competitors could get access to the Chinese market with lower quality of the seeds. EG has the chance on a have long term co-operation with Chinese grass seeds research centers in different regions in China to participate into the research and try to satisfy to the Chinese customers..

4 RECOMMENDATION

China is a high potential target market for grass seeds and is growing very fast. It is not offering high margins to the suppliers, but it may give the opportunity to expand the sales area and quantities. China already became to one of the most important invested countries for companies' goals or their main target. It means that develop the Chinese market would become the high competitive place in the future.

4.1 Time to develop into Chinese market

According to the research, now the Chinese market will further grow and mature. In this kind of environment, EG should expand its market activities and try to develop into China grass seed, particular around Beijing area and the Northern part of China. It is a good opportunity for EG due to the fact that the market is still immature and ready to grow. EG can search the space to export and increase its business with Chinese customers.

4.2 Co-operation with Research Centers & Customers

Co-operation is a good way to help EG enter into China because of its quality leadership. But EG although has strong power with quality leadership and good customer service, it still has less business culture to China. In order to know more useful information about Chinese grass seeds industry also let more and more Chinese customers know EG, it is better to try to co-operate with Chinese research centers and leading customers (the contact details are in Appendix 2 and Appendix 3). It not only helps EG know more about Chinese grass seeds market, also easy to set up and update market strategy to China.

4.3 Representative of Euro Grass in China

For EG the grass seed export procedures to China is not quite difficult, because EG has a high stand of the quality of the seed and a good customer service. Prices have to be very

competitive. However, there are already some overseas companies, which have stable and long-term business with Chinese clients, so EG has to include in his activities experienced staff to perform with the requirements of the Chinese customers or the market demands. Close linkage with EG headquarter is required, also in combination with direct staff support from EG at the beginning. Detailed plan has to be developed with the staffs who really participate into Chinese market business. Time of business travel to China and the information update need to be mentioned during the detail plan. Important is also detailed field research and test of the EG Germplasm in China.

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Appendix 1

Area and Distribution of Grassland

China is one of the countries with the most plentiful grassland resources in the world. The total area is 392,832,633 ha (1994), which accounts for 11.82 percent of the world's grassland and takes third place after Australia and Russia. **The area of usable grassland is 330,995,458 ha.** (Excluding Hong Kong, Macao), **34.49 percent of the national land area.** Most of China's grassland is in the northern arid and cold areas. For grassland area and number of livestock the six major pastoral areas are Tibet, Inner Mongolia, Xinjiang, Qinghai, Sichuan and Gansu. The grassland of these regions accounts for 74.68 percent of the national land total.

Table I shows the each provinces area for Grasslands

Table I: the area ha for each provinces' Grasslands					
Province	Total Grassland Area		Usable Grassland Area		
	Area (ha)	Percentage of total land	Area (ha)	Percent	Per capita (ha)
Beijing	394,846	24.07	336,310	0.10	0.03
Tianjin	146,604	12.97	135,402	0.04	0.02
Hebei	4,712,140	25.06	4,085,324	1.23	0.06
Shanxi	4,552,000	29.03	4,552,000	1.38	0.15
Inner Mongolia	78,804,480	68.81	63,592,092	19.21	2.84
Liaoning	3,388,848	23.23	3,239,293	0.98	0.08

Jilin	5,842,182	30.60	4,378,993	1.32	0.17
Heilongjiang	7,531,767	16.57	6,081,653	1.96	0.17
Shanghai	73,333	11.64	37,333	0.0002	0.0029
Jiangsu	412,700	4.08	325,673	0.10	0.0049
Zhejiang	3,169,853	30.57	2,075,176	0.63	0.05
Anhui	1,663,179	11.89	1,485,176	0.45	0.02
Fujian	2,047,957	16.54	1,957,060	0.59	0.06
Jiangxi	4,442,334	26.58	3,847,562	1.16	0.09
Shandong	1,637,974	10.45	1,329,157	0.04	0.02
Henan	4,433,788	26.76	4,043,253	1.22	0.04
Hubei	6,352,215	34.23	5,071,537	1.53	0.09
Hunan	6,372,668	30.07	5,666,309	1.71	0.09
Guangdong	3,266,241	18.34	2,677,239	0.81	0.04
Guangxi	8,698,342	36.75	6,500,346	1.84	0.14
Hainan	949,773	27.93	843,273	0.25	0.12
Sichuan	20,964,932	42.16	18,230,281	5.51	0.22
Chongqing	1,537,844	24.07	1,390,021	0.41	0.05
Guizhou	4,287,257	24.40	3,759,735	1.14	0.11

Yunnan	15,308,433	40.11	11,925,587	3.61	0.31
Xizang (Tibet)	82,051,942	68.10	70,846,781	21.41	30.1
Shaanxi	5,206,183	25.32	4,349,218	1.31	0.13
Gansu	17,904,206	42.07	16,071,608	4.86	0.67
Qinghai	36,369,746	51.36	31,530,670	9.53	6.91
Ningxia	3,014,067	58.19	2,625,556	0.80	0.51
Xinjiang	57,258,767	34.68	48,006,840	14.51	2.93
China	392,832,633*	41.41**	330,995,458	100.00	0.28
<ul style="list-style-type: none"> ● Hongkong Macao and Taiwan not included. ** Percentage of grassland to total inland area. ● Source: China Resource Information Editorial Committee (2000) 					

Major Forage Grasses and Forage Crops

China has many forage grasses and forage crops. There are more than 100 species of cultivated forage in China; most are legumes and grasses. Among these, over 30 species are sown on more than 10,000 ha. (excluding mixed sowing, see Table II)

Forage	Area	Life Period	Rank
<i>Medicago sativa</i>	1804.7	Perennial	1
<i>Astragalus sinicus</i>	1686.9	Perennial	2
<i>Caragana koshinskii</i>	1108.7	Shrub	3
<i>Astragalus huangheensis</i>	653.2	Perennial	4
<i>Vicia villosa</i>	123.9	Biennial	12
<i>Vicia sativa</i>	98.9	Annual	14
<i>Onobrychis viciaefolia</i>	65.2	Perennial	17
<i>Trifolium repens</i>	31.7	Perennial	19

<i>Oxytropis coerulea</i>	28.7	Perennial	20
<i>Trifolium pratense</i>	28.2	Perennial	21
<i>Stylosanthes guianensis</i>	26.9	Perennial	22
<i>Melilotus alba</i> , <i>M. officinalis</i>	20.7	Biennial	24
<i>Zea mays</i> (forage)	570.5	Annual	5
<i>Leymus chinensis</i>	403.7	Perennial	6
<i>Hordeum vulgare</i>	358.7	Annual	7
<i>Elymus sibiricus</i>	230.3	Perennial	8
<i>Lolium multiflorum</i>	183.2	Annual	9
<i>Avena sativa</i>	155.7	Annual	10
<i>Elymus dahuricus</i> , <i>E. excelsus</i>	138.6	Perennial	11
<i>Avena nuda</i>	118.7	Annual	13
<i>Setaria italica</i> (forage)	80.0	Annual	15
<i>Sorghum sudanense</i>	77.2	Annual	16
<i>Bromus inermis</i>	22.5	Perennial	23
<i>Secale cereale</i>	20.1	Biennial	25
<i>Lolium perrene</i>	17.6	Perennial	26
<i>Agropyron cristatum</i>	14.4	Perennial	28
<i>Dactylis glomerata</i>	13.7	Perennial	29
<i>Artemisia sphaerocephala</i>	55.3	Sub-shrub	19
<i>Raphanus sativus</i>	17.0	Biennial	27
<i>Amaranthus paniculatus</i>	10.5	Annual	30
Source: Cheng Baoshu (2001)			

Cultivated Grasses Around 24 genera and 60 species of grasses are cultivated in China. The major genera and species are briefly introduced as follows:

Agropyron: *Agropyron cristatum* (sown in the northern China), *Agropyron mongolicum* (adapted to steppe and desert zones) and *Agropyron desertorum*.

Alopecurus: *Alopecurus pratense* and *Alopecurus arundinaceus*; are not used much.

Arrhenatherum: *Arrhenatherum elatius*.

Bromus: *Bromus inermis* (has been sown in China for more than 100 years and its cultivated area is increasing in the humid regions of northern China and the Qinghai-Tibet Plateau), *Bromus catharticus*.

Cynodon: *Cynodon dactylon* (widely used as forage and turf).

Dactylis: *Dactylis glomerata* (sown widely in China and the area is large).

Elymus is an important grass and of great value for establishing perennial artificial grassland. Cultivars in this genus are characterized with strong adaptation, strong cold tolerance and easy maintenance. *Elymus sibiricus* and *Elymus nutans* were domesticated in the 1950s and

are major cultivated grasses in northern China (especially on the Qinghai-Tibet Plateau). They can be sown in pure stand but perform better if the two are mixed. *Elymus dahuricus* and *Elymus excelsus* are also cultivated.

Elytrigia: *Elytrigia repens*, *Elytrigia intermedia* and *Elytrigia trichophora*.

Hemarthria: *Hemarthria compressa* (mainly grown in the subtropical south-western humid areas and Sichuan).

Hordeum: *Hordeum brevisublatum* and *Hordeum bogdanii* (used for both grazing and hay with features of hydrophile and salinity tolerance).

Leymus: *Leymus chinensis* (has a wide ecological range and is salinity resistant, with high nutritive value and was sown on a large scale in the 1950s as one of the key cultivars of permanent artificial grassland), *Leymus secalinus* (is resistant to cold, drought and salinity with strong colonising ability, but its cultivated history is short).

Lolium: *Lolium perenne* (a famous perennial grass, widely cultivated since 1970s; an important forage grass and also the most important turf grass in humid regions) and *Lolium multiflorum* (mainly sown in winter in rice raising areas of subtropical zone can be grown in the warm Temperate Zone of North China).

Paspalum: *Paspalum dilatatum* and *Paspalum wettsteinii* (all cultivated species in this genus are introduced and these two are important in tropical and subtropical areas).

Pennisetum: *Pennisetum purpureum* (introduced in the 1930s, is grown in subtropical areas on a large scale).

Phalaris: *Phalaris arundinacea* (is all over China, and is widely sown since it tolerates waterlogging, salt and pests), *Phalaris tuberosa* (introduced in the 1970s, is cultivated in southern subtropical areas) and *Phalaris canariensis* (not used much).

Phleum: *Phleum pratense* (is cultivated and widely sown, but the area is small).

Poa: *Poa pratensis*, *Poa pratensis* var. *anceps* (wild on the Qinghai-Tibet Plateau and adapts to cold with grazing and cutting tolerance), *Poa trivialis*, *Poa erymophila* and *Poa compressa*.

Puccinellia: *Puccinellia tenuiflora* (domesticated in 1930s) and *Puccinellia chinampoensis* (both are famous for salinization control).

Roegneria: *Roegneria semicostata*, *Roegneria ciliaris* (both are widely distributed), *Roegneria kokonorica* (domesticated in the 1960s and is important for artificial grassland with its strong cold tolerance in alpine regions of Qinghai-Tibet Plateau).

Setaria: *Setaria anceps* (introduced, sown in southern subtropical areas).

Sorghum: *Sorghum sudanense* (introduced in the 1930s and sown nationwide. It is a vital fish fodder).

Spartina: *Spartina anglica* (introduced from United Kingdom in 1963 and widely planted in coastal areas. It is of great value for the improvement of saline coastal areas).

Zoysia: *Zoysia japonica*, *Zoysia sinica*, *Zoysia tenuifolia*, *Zoysia matrella*, *Zoysia macrostachya* etc. (creeping grasses for grazing, slope consolidation and turf).

Good Forage Grass Cultivars

The characteristics of some **important cultivars** in terms of breeding targets are introduced below

(detailed information can be obtained from the **National Examining and Approval Committee of Forage Grass Cultivars**, contact address: Animal Husbandry and Veterinary Medicine Division, Ministry of Agriculture, Beijing 100026)

Early Ripening Cultivars Erect milkvetch (*Astragalus huangheensis* = *A. adsurgens*) cannot produce seeds or the seed yield is very low north of the Yellow River because of insufficient accumulated temperature. New cultivars, "Huanghe No. 2", "Longmu No. 2" and "Zaoshou" were bred by systematic selection or ⁶⁰Co-γ. Flowering date could be 20 days earlier and the seed yield can be increased by 80 to 120 percent.

Lactuca indica originated in the warm temperate and subtropical zones. New cultivars, "Gongnong", "Longmu" and "Mengzao" were bred by mixed selection, and these new cultivars are early maturing, cold resistant and high seed yielders.

Cold Resistant Cultivars Legume cultivars suitable for mixed sowing and pure stand are very scarce in northern China. New cultivars of *Medicago sativa*, "Caoyuan No. 1", "Caoyuan No. 2", "Gannong No. 1", "Longmu 893", "Tumu No. 1", "Xinmu No. 1" and "Xinmu No. 3" were bred using interspecific crossing or intergeneric crossing of *M. sativa* x *M. falcata*. Hybrid cold resistant cultivars of *Onobrychis viciifolia* are "Mengnong" and "Gannong No. 1".

Disease Resistant Cultivars Downy mildew is a major disease of *Medicago sativa*. "Shingling No. 1" is a cultivar resistant to downy mildew, bred by identifying disease-inoculated strain, selecting, and crossing. Its disease-free rate is 95 to 100 percent.

Stylosanthes guianensis is severely infected by anthracnose. "Reyan No. 2" was bred through selection and "907" through ⁶⁰Co-γ for resolving the problem.

Salt Tolerant Cultivars A salt-resistant cultivar of *Medicago sativa*, "Zhongmu No. 1", was crossbred with four good cultivars as parents through open pollination and mix selection for four generations. It enables *Medicago sativa* to be grown in saline soil and yields can be higher by more than 10 percent compared to ordinary cultivars.

Drought and Heat Resistant Cultivars It is hot and dry in the Yangtze River catchment in summer and this is to the detriment of over-summering temperate forages. The new cultivar, "Emu No. 1", was bred from cultivar "Regal" of *Trifolium repens* as parent material through

natural selection, artificial selection, individual selection and multiple crossbreeding. The summer survival rate was increased by 15 percent.

A new cultivar, "Nannong No 1." (*Lolium perenne* x *Festuca arundinacea*), was bred by intergeneric crossing with *Lolium perenne* cv "Manawa" as female parent and *Festuca arundinacea* as male . It is cold resistant, and tolerates waterlogging and drought.

Grazing Tolerant Cultivars of Lucerne with Stool Shoots Based on introduced stoloniferous lucernes, two new cultivars, "Gannong No. 3" and "Gannong No. 2" of *Medicago sativa*, were bred respectively in semiarid area and alpine area through spot sowing, individual fixed planting and cloning. The proportion of plants with stolons of the former is more than 30 percent, and the proportion of plants with horizontal roots of the latter ranges from 50 to 80 percent (Geng Huazhu, 1995).

Polyploid Cultivars Polyploid plants are characterized by eugonic growth, high yield and strong cold and drought resistance, but low seed yield. This feature could be used to increase the yield of vegetative organs. Up to now, heptaploid *Triticosecale wittmack* cv "Zhangxin 1881" and hexaploid cv "Zhangsi 237" have been bred octoploid. Tetraploid *Lolium multiflorum* cv "Ganxan No. 1" and "Shangnong" were bred as well.

Hybrids These cultivars include *Zea mays* cv "Jiqing No. 7" (Pa91 X 340), "Longmu No. 3" (GJ60 X GB47-1), "Longmu No. 5" (J38 X GB33), "Liaoqing No. 8" (Liaoyuan No. 1 X Gueiqong), "Huanong No. 1" (Tian 111 X Mexico *Euchlaena mexicana* inbred line A1), "Xinduo No. 2" (Huangyu 5-5-5 X 7G) and "Zhongyuandan No. 32" etc. These cultivars have significant heterosis.

Cultivars of *Sorghum bicolor*, "Liaosiza No. 1" (*S. bicolor* male sterile line T X 623A X sugar *S. bicolor* restorer line 1022) and "Liaosiza No. 2" (*S. bicolor* sterile line LS3A X sweet *S. bicolor* restorer line Roma), are waterlogging tolerant, drought tolerant and salinity tolerant. "Wancao No. 2" (*Sorghum bicolor* x *S. sudanense*) has low hydrocyanic acid content and is suitable for green use . *Pennisetum purpureum* (male sterile line Tifa 23A X restorer line Bil 3B-6) is taller and has more tillers. "Mingmu 42" is a fodder cultivar of *Saccharum officinarum* bred from CO419 (female parent) and PT43-52 (progeny of wild variety, male parent). It is has high yield, high quality and multiple resistance.

Cultivars Selected from Wild Plants *Puccinellia chinampoensis* can grow in salty soil (pH > 9.4, salt content of topsoil 2.0 to 2.5 percent), but native types only germinate where the temperature range is more than 10 °C. This limits their widespread use. Using four excellent strains and an integrated variety a new cultivar, "Jinong" has been bred. Its germination and yield are improved significantly.

Hedysarum laeve and *Hedysarum scoparium* are excellent pioneer shrubs for wind breaks, sand fixation and fodder. The productivity of wild strains is low. New cultivars, "Zhongcao No. 1" of *Hedysarum laeve* and "Zhongcao No. 2" of *Hedysarum scoparium*, were bred through single plant selection, mix selection, strain test, regional testing and production

testing. New cultivars retain the excellent features and strong vitality of wild plants and the biomass could be increased by 20 percent.

Appendix 2

Grassland institute of China Agricultural Sciences

There are 23 organizations related to grassland and grass research in China, of which six national institutes are affiliated to the China Agricultural Academy and China Academy of 36 agricultural universities. The top-level technical extension organization in charge of grassland management and fodder production is the Animal Husbandry and Veterinary Medicine Station of China's Agriculture Ministry. Accordingly, each province has a Grassland Station or Forage Grass and Forage Crop Extension Station. Each county has an Animal Husbandry and Veterinary Medicine Station at county level or a Grassland Station where the grassland area is large.

Grassland Institute of Chinese Academy of Agricultural Sciences

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Fax: 0086 471 4961330

Grassland Division, Beijing Animal Husbandry Institute, Chinese Academy of Agricultural Sciences

Address: Yuanmingyaunxi Road No. 2, Beijing 100094

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Tel.: 0086 10 62815750

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Gansu Grassland Ecological Research Institute

Address: P.O. Box 61, Lanzhou 730020, Gansu Province

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Dr. Nan Zhibiao, Vicedirector, email: nanzb@public.lz.gs.cn

Prof. Ren Jizhou, Academician, email: renjz@unet.net.cn

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Sichuan Grassland Institute

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Grassland Resource Division, Geography and Natural Resource Institute, Chinese Academy of Sciences

Address: Building 917, Anwaidatun Village, Beijing 100101

Contact: Prof. Su Daxue, Grassland Resource

Prof. Huang Wenxiu, Grassland Livestock Ecology

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Fax: 0086 10 64889456

Qinghai Grassland Institute

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Email: duzc@2911.net

Tel.: 0086 971 5318386

Fax: 0086 971 5318044

Xinjiang Grassland Institute

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Grassland Science Department of Xinjiang Agricultural University

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Dr. Meng Lin, email: menglinwang@yeah.net
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Fax: 0086 991 4552178

Grassland Science Department of Qinghai University

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Fax: 0086 471 4954460

Grassland Research Institute of China Agricultural University

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Fax: 0086 10 62892799

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Fax: 0086 835 2242851

Grassland Science Department of Nanjing Agricultural University

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Fax: 0086 25 4395314

Grassland Research Institute of Northeast Normal University

Address: Renmindajie, Changchun 130024, Jilin Province
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Prof. Zhu Jingchen, email: gjixun@nenu.edu.cn
Tel.: 0086 431 5662860

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Tropical Pasture Research Center of Chinese Academy of Tropical Agricultural Sciences

Address: Danzhou 571737, Hainan Province

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Fax: 0086 890 3300440

Grassland Ecosystem Research Station of Botany Research Institute of Chinese Academy of Sciences

Address: Xiwaidajie 141, Beijing 100044

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China Grassland Society

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Contact: Prof. Hong Fuzeng, Chairman

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Fax: 0086 10 62892799

Grassland Research Institute of Ningxia Agricultural College

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Inner Mongolia Academy of Animal Science

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Appendix 3

Chinese domestic grass seed companies

Chinese leading trading companies

Beijing Clover
www.bjclover.com

Top Green
www.topgreen.cn

Beijing rytway
www.rytway.com.cn

Hopeturf
www.hopeturf.com

Distributors

Shandong Shengfeng Grass seeds
[Http://www.sfmucao.com](http://www.sfmucao.com)

Henan Zhengzhou Huafeng grassland
www.hfseeds.cn

Beijing Great-green ecological Technology Development co. Ltd
www.greatgreen.com.cn

Beijing Mammoth Horticulture co. Ltd
<http://www.mengma.cc/>

Beijing Bright turf co. Ltd
<http://www.brightturf.com/>

Beijing Oasis Technology co. Ltd
<http://www.oasionline.cn>

Agency act for export-import certification

Beijing Wannongxing Tech Ltd. co
www.bjwnx.com/