

Co-operation with China as an Element of a New Strategy of Management of Polish Horticultural Seeds Companies

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Abstract. After changing an economic system in Poland from socialistic into capitalistic in 1989, Polish horticultural seed companies went through crucial and drastic changes. One of them consisted on developing a new strategy of management to produce more competitive and cheaper seeds. One of its elements was to move production of seeds from European locations to China. The most important advantages of it were: more favorable weather conditions, longer vegetation period, lack of some diseases recorded, lower economic risk of production, lower labour price, higher quality of the final product and increasing their own selling record through entering a Chinese market. The most profitable production in China is carried out on hybrid cultivars, in which no male sterile forms are available and therefore much hand labour is needed. The paper shows a scheme of the Polish-Chinese co-operation in seed business and market relations. This newly developed strategy has been highly profitable for both Polish and Chinese seed companies. Moreover, it has increased the seed trade turnover between our both countries. It also stimulates Chinese seed production companies to introduce new technologies and learn know-how.

Keywords: horticultural seeds, flower and vegetable seed production, seed company strategy, Chinese seed production

INTRODUCTION

In 1989, Poland changed its economic system from socialistic into capitalistic. This caused many fundamental changes in the country's husbandry, including agriculture and horticultural seeds sector (Duczmal, 2004). As a result, a free market for seeds was established, many state-owned seeds companies collapsed and privatization of the seed sector started (Hołubowicz *et al.*, 2006). However, soon new private seeds companies were established. Moreover, foreign seeds companies, seeing a potential for a new market, entered Poland with their new cultivars and high quality seeds. This created a permanent over production of seeds and forced Polish companies to develop a new strategy to survive on the market (Hołubowicz and Bralewski, 2004). One of its elements was a co-operation with foreign companies.

In the recent years, China has developed a strong seed production for both agricultural and horticultural species. The country has had the fastest growing seeds market in the world. Its value for seed business in 2004 was evaluated for 4 billion USD (Duczmal, 2004; Le Buanec, 2007). At present, there are about 3.000 seed companies operating in China. They are mostly orientated for seed trade and domestic market. However, some of them, especially on the local (provincial) level, run services for foreign companies multiplying seeds for them (Hołubowicz, 2008). Moreover, they also seek new cultivars suitable for China climatic conditions. This has created China to be a very attractive business partner for many countries.

The main purpose of this paper was to find out what were the reasons of the Polish horticultural seeds companies to start co-operation with China as an element of their new

managing strategy.

MATERIALS AND METHODS

Seven horticultural seeds companies were selected, which had been co-operating with China in the years 2000-2009. These were: PlantiCo Świętosław, PlantiCo Gołębiew, PlantiCo Zielonki, Torseed SA, Polan, PHRO Krzeszowice and W. Legutko. All of them were 100 % Polish companies.

PlantiCo Świętosław - a state-owned company located near Włocławek (Middle Poland) on the best soils in the country. It specialized in breeding vegetables, especially field tomato and sweet pepper. They also bred flowers and had seeds production. The company had a side agricultural production. In the late 90s, it bore losses and was considered as an inefficient, costs-bearing and non-profit company. In 2001, the company was partly sold and partly taken over by another Polish seed company.

PlantiCo Gołębiew – a state-owned company located near Kutno (Middle Poland) on the most fertile soils in the country. They were breeding vegetable and flower species, amongst others, they were the only breeder of leek in the country. In the years 2000-2004, they had developed and registered on the Polish National List (PNL) the highest number of horticultural cultivars. They also produced seeds and had a side nursery and agricultural production. However, despite all this success, the company bore losses and was considered as an over-invested, non-profit one. In 2008, it was taken over by another Polish seed company.

PlantiCo Zielonki – a state-owned company, located in Zielonki near Warsaw (Middle Poland). It is breeding vegetable species, amongst others, including head cabbage, the most important vegetable in Poland. The company has been the biggest vegetable breeding and seeds production in Poland and one of the only 3 companies in Poland breeding flowers. They have the most modern facilities for seed processing and storage in the country. It is strategic for Poland, a strongly developing and expansive company.

Torseed SA – a private share-holders company, located in Toruń (Northern Poland). It has neither strong breeding programme nor big agricultural side production. Their strength is based on its own capital received from their own share holders (seed growers and distributors) and well developed seed marketing. They are orientated for trade of all kinds of horticultural products for amateur market. The company owns 3 garden centers. A stable, profitable and well developing company orientated for one segment of the market.

Polan – a state-owned company, located in Cracow (Southern Poland). It is the oldest horticultural breeding company with the highest number of cultivars ever developed and registered on the PLN in Poland, amongst others: head cabbage, carrot, common bean and cucumber. They also breed flowers. The company is the only breeder of garlic and hybrid cultivars of red beet in Poland. They have large and profitable side agricultural production. It is an important, strategic for Poland, fast developing seed company.

PHRO Krzeszowice – a state-owned company, located in Krzeszowice near Cracow (Southern Poland). They had a large vegetable breeding programme. They were the only breeder of tomato under covers and hybrid carrot cultivars in the country. Their side production – 11 ha of modern, highly advanced greenhouses with the commercial tomato and cucumber fruit production is dominating. Recently, the company has been facing financial problems due to increasing costs of fuel for heating greenhouses and competition of cheap tomatoes coming from Spain. In 2009, it was divided into 2 parts and taken over by Polish and French seeds companies.

W. Legutko – a private company run by one family, located in Jutrosin (Western Poland).

They had the biggest flower breeding programme in the country. They have developed and registered over 80 cultivars of flowers, amongst them full flower begonia and dahlia. At present, they have the biggest flower species and cultivars offer in the European Union. They have large seeds production of both flowers and vegetables in many countries. Majority of the seeds are packed in small pictorial packets and exported. Recently, the company has been building a new seed processing plant and a modern storage house. It is a leading horticultural seed company in Poland, with the highest percentage of exported seeds. .

Managers of the companies were asked to provide some written materials and information concerning their co-operation with China as an element of their new strategy. These included dominating species, the main reasons of the decision and the biggest advantages of it in comparison with the previous strategy. They were also asked for the prediction as to the future of their companies. In a few cases, the additional interviews had been carried out, followed than by telephone calls and comments to the decision of the companies' owners. The results were then summarized in a general scheme showing the steps in co-operation procedures and into a table.

RESULTS AND DISCUSSION

In all studied cases, there were the same reasons to take co-operation with China into their strategy. These were: favourable climatic conditions and low costs of labour. The majority of seed multiplications done for the companies in the years 2000-2009 took place in two Chinese provinces: *Gansu* (flowers) and *Hebei* (vegetables). In both of them, the vegetation period is 1-2 months longer than in Poland. It means that some late cultivars of certain species, e.g. lettuce, squash, cucumbers, celery and China aster, which need many days to complete their growth and therefore cannot completely develop in Poland, can develop fully ripen seeds in China. Moreover, dry and hot weather during seed drying (June, July) help to reach high germination capacity of the seeds, which nowadays is the main quality criteria for their market price. Another, very important reason is lack of reported diseases of some species. For example, mallow (*Althea rosea* L.) - a popular decorative flower grown in amateur gardens - is commonly attacked in Europe by a disease called a mallow rust caused by a fungus *Puccinia malvacearum*. This disease, however, had not been reported in China yet. It means that production of its seeds there is cheaper because no chemical control of the plantation is needed.

The other very important reason for managing decision to move the seeds production over from Poland to China was a low cost of labour. All species multiplied in China (Tab. 1) need high input of labour. In the case of hybrid (F₁) tomato, where, in commercial production, there is no male sterile (MS) lines needed for their hybrid seed production, one must by hand emasculate each flower on the plant and then again by hand pollinate it with a previously collected pollen. The job must be done practically within a short period of time (a week or so), when the flower buds are not yet open. In Poland, 1 hour of such special work costs (in the year 2011) at least 3 Euro, whereas in China it can be done by at a price of 0.12 – 0.3 Euro per hour, i.e. over 10-20 times cheaper. With flower seeds, in turn, seed harvest is the most labour-consuming stage of production. For example, in pansy (*Viola x wittrockiana* Ness.) seeds are harvested by hand every 2 days for 3 - 4 months. Due to high labour costs in Poland, pansy seed production has become no longer profitable for domestic seed growers.

All these three factors have created conditions, in which seed production in China has lower economic risk than the same production carried out in Poland or any other country in Southern Europe. This is because the final production price of produced in China seeds is

much lower than the seeds produced elsewhere. This is the main reason why seed production companies in the leading in the world countries such as: the US, France, Holland, Germany and Italy, had decided to move over their seed multiplications from their own countries to China. This managing decision eventually significantly increased their profits.

Another very important issue is the quality of the final product – the seeds. When they are produced in China, in the climatic conditions close to the optimal ones, their quality measured by a genetic purity and seed germination increase. The bet example here is China aster – a leading ornamental flower in the world. In Poland, when producing its seeds, in some years we had been a problem to reach 80 % seed germinating. It could be reached only by rejecting half of the harvested raw seeds, resulting then in increasing their final market price. In China, 90 % seed germination is easily reached and the seeds are cheaper.

Another big advantage of starting co-operation with China for the companies was entering the Chinese seed market. Practically all Polish cultivars, when multiplied in China, are at the same time tested by Chinese as to their adaptability to their local conditions of growing. If so, part of the seeds is left as a payment for the run service. That happened mostly to hybrid cultivars, which developing through breeding prgrammes is expensive and needs starting breeding materials not yet available in China. Moreover, this most advanced technology also stimulates the Chinese seed companies to adopt the newest and the most advanced know-how and practically applied them in seed business.

Tab. 1

Polish horticultural seeds companies operating in China in the years 2000-2009

Company	Legal status	Species	Organization trend
PlantiCo Świętosław	state-owned	tomato F ₁ sweet pepper F ₁	taken over by another company
PlantiCo Gołębiów	state-owned	tomato F ₁ ,	taken over by another company
PlantiCo Zielonki	state-owned	tomato F ₁ , sweet pepper F ₁ , cucumber F ₁ , crispy lettuce, celery	took over 2 other companies
Torseed SA	private	China aster	develops garden centers
Polan	state-owned	China aster	taken over by another company
PHRO Krzeszowice	state-owned	Tomato F ₁	taken over by 2 companies
W. Legutko	private	over 20 species of vegetables and flowers	carries big investments

The scheme of the co-operation between the Polish and Chinese seeds companies is as followed (Fig. 1).

The Polish seeds companies develop a new cultivar or get the intellectual property right from its owner to use a given cultivar. Then, they directly or through a go-between company find a Chinese seed company specializing in multiplication of seeds of the given species. At this stage, some kind of expertise and recommendation is needed. Usually, a company people from Poland visit a potential Chinese seed company during the production time (an early summer) to see the seed plants and how the crucial works by its employees are done. These works in seed business are: pollination and off-type selection. Then, the stock seeds (Prebasic or Basic) or hybrid components: mother and father lines (needed for F₁) are

sent to China. The Chinese seed company passes the stock seeds to its co-operants, i.e. seed growers specializing to multiply seeds of a given species. Based on the contracts, they do the production in the field or in the plastic tunnels. Then, soon after setting seeds (the turn of June and July) the breeder and his assistants from a Polish company inspect the plantation. They check the cultivar identity, mother lines, distance botanical isolation from another cultivar of the same species, health status of the plants and evaluate their final seed yield. In flower seed production, they come later to see blooming plants and check the off-type selection work. In both, vegetable and flower production, eliminating untypical seed plants on the Chinese seed plantation were pointed out by the Polish managers to be the biggest problem. Then, the raw, dried seeds are carried out to the processing plant where they are preliminary cleaned and their germination is checked. At this stage, they are shipped to Poland and part of it, when needed in China, after cultivar check, is left in China for a domestic market. The seeds from China, after going through a routine customs and health check on the border, are then shipped to the Polish seed company. There, their quality is checked in both laboratory and greenhouse. If the seeds meet the criteria from the contract, they are paid for and further processed and packed. Next, through a chain of distributors, they reach the end user: an amateur or professional gardener (Fig. 1).

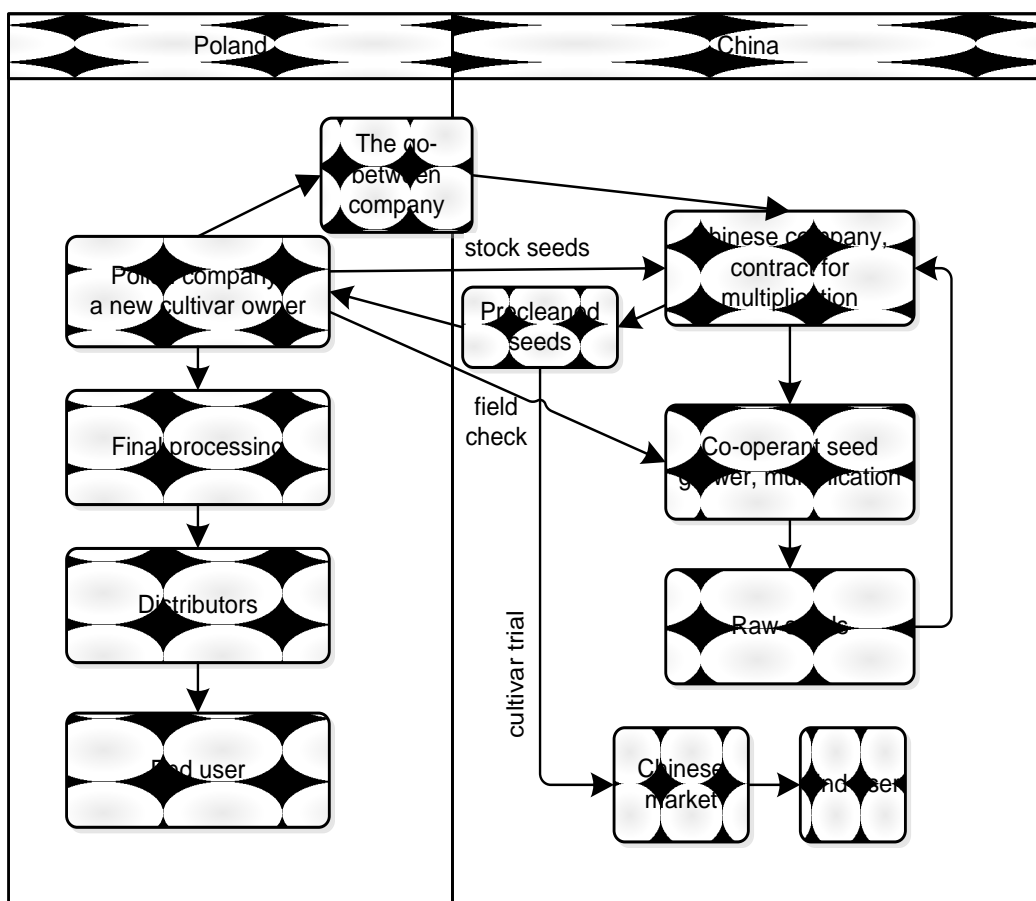


Fig. 1. A new strategy of Polish seed companies operating in China

Since 1989, Polish seeds companies have gone through crucial changes. Polish vegetables and flowers production have high potential (Loftus *et al.*, 2005), therefore, there is a good market for seeds (Oleksiak, 2003). The Polish seeds companies go through big

changes, many of them will soon be privatized, what is considered as a good step towards better management of a seed company (Kelly, 1989; Mumby, 1994; Kelly and George, 1998). Eventually, all of them will be private (Douglas, 1980, Anonymous, 2000, Hołubowicz et al., 2006). Their final number of the Polish seed companies will also decrease. A co-operation with China did not help some of them, which were financially poorly managed or used state subsidization programmes (finished since 2008). to survive but by lowering the production costs prolonged their presence on the market and created better conditions for being taken over by stronger companies. In the future, more attention will be paid in seed business to logistics (Hołubowicz, Bralewski, 2007) and seed quality management (Hołubowicz and Cieślík, 2005) as well as to new product lines, e.g. organic seeds (Hołubowicz and Wojtasiak, 2009).

CONCLUSIONS

Polish horticultural seeds companies have moved part of their production of seeds from European locations to China.

The most important advantages of it were: more favorable weather conditions, longer vegetation period, lack of some diseases recorded, lower economic risk of production, lower labour price, higher quality of the final product and increasing their own selling record through entering a Chinese market.

The most profitable production in China is carried out on hybrid cultivars, in which no male sterile forms are available and therefore much hand labour is needed.

It also stimulates Chinese seed production companies to introduce new technologies and learn know-how.

REFERENCES

- 1 Anonymous (2000). Strategy for the Polish seed sector. *Hod. Rośl. Nasien.* 2:2-11 (in Polish).
2. Douglas, J.N. (1980). Management of seed enterprise. In: "Successful Seed Programs: A planning and Management Guide." Westview Press, Boulder, Colorado: 94-100.
3. Duczmal, K.W. 2004. 4th Eastern European Seed Network Meeting. *Hod. Rośl. Nasien.* 4:10-29.
4. Hołubowicz, R. and T.W. Bralewski (2004). Strategies of development of horticultural breeding and seed production companies after Poland joins the European Union. *Folia Univ. Stetin.* 239:127-130.
5. Hołubowicz, R. and Z. Cieślík (2005). Technologies of future companies in horticultural seed business. In: "Management of Production Systems" ed. M. Fertsch, S. Trzcieliński, Politech. Univ. Publ. Co., Poznań.
6. Hołubowicz, R., Bralewski, T.W. and J. Cullum (2006). State-owned Polish seed companies due to be sold. *Veg. Grow.* 4:41.
7. Hołubowicz, R. and T.W. Bralewski (2007). Importance of logistics in horticultural seed sector. *Logistyka* 1:1-5 (in Polish).
8. Hołubowicz, R. (2008). Challenges of the European seed industry. *Bull. UASVM, Hort.* 65:21-25.
9. Hołubowicz, R. and J. Wojtasiak (2009). Costs of organic and conventional production of common bean seed (*Phaseolus vulgaris* L.) in Poland. *Acta hort. reg.* 12:1283-185.
10. Kelly, A.F. (1989). Seed planning and policy for agricultural production. Belhaven Press, London.

11. Kelly, A.F. and R.A.T. George (1998). Role of the private sector. In: "Encyclopaedia of Seed Production of World Crops" John Wiley & Sons, Chichester: 3-7.
12. Le Buanec, B. (2007). Evolution of the seed industry during the past three decades. *Seed Test. Intern.* 134:6-10.
13. Loftus, S., Hołubowicz, R. and J. Cullum (2005). Polish vegetable growers. How strong are they really? *Veg. Grow.* 11:18-21.
14. Mumby, G. (1994). Strategic planning. In: "Seed Marketing". FAO Rome. 127-130.
15. Oleksiak, T. (2003). Seed market in the countries of the European Union. *Hod. Rośl. Nasien.* 2:15-16 (in Polish).