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Specialty Crops – A Perspective for Kazakh Arable Producers?

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Specialty Crops – A Perspective for Kazakh Arable Producers?

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1. Introduction

Kazakhstan's potential to produce and export arable crops is huge from a purely production standpoint but the big challenge is infrastructure and logistic cost. Due to the land locked situation, farm gate commodity prices are fairly low even in situations when global commodity markets show high values. Therefore it is quite a challenge to run arable farms profitably.

Against this background the question arises what cropping strategies might be appropriate to maximize profitability of crop production? When searching for such crops it appears that Canada and Australia might be good places to look at because they share some key characteristics of natural and economic framework conditions with Kazakhstan:

(1) They all have some rather arid locations with very low precipitation (typically > 400 mm) and – at least as far as Canada is concerned – short vegetation periods.

(2) Due to these natural conditions the yield potential in major commodity crops such as wheat or barley is rather low (1.5 to 2.5 t/ha) compared to other parts of the world.

(3) These yield levels for major commodities lead to low opportunity cost for land. This in turn makes crops attractive that are low in yield "per se" – such as pulses or rapeseed and other oilseeds such as linseed.

(4) In particular Canada is also a very large country with major parts of the arable land far away from ports and with no/little access to water ways. Therefore transport cost is high and constitutes a very important factor in the development of cropping systems.

(5) Domestic transport cost in an exporting country is similar to "fixed cost". This implies that their relative impact on farm gate prices is lower when product prices are high – and vice versa.

(6) Since wheat is a relatively low value product this implies that its on-farm competitiveness relative to high value crops is decreasing even further compared to a situation in which transport cost are not as

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important. [3]

From these considerations it can be concluded that Kazakhstan and Canada and – to a certain extent also Australia – are very well positioned to grow low yielding high value crops.

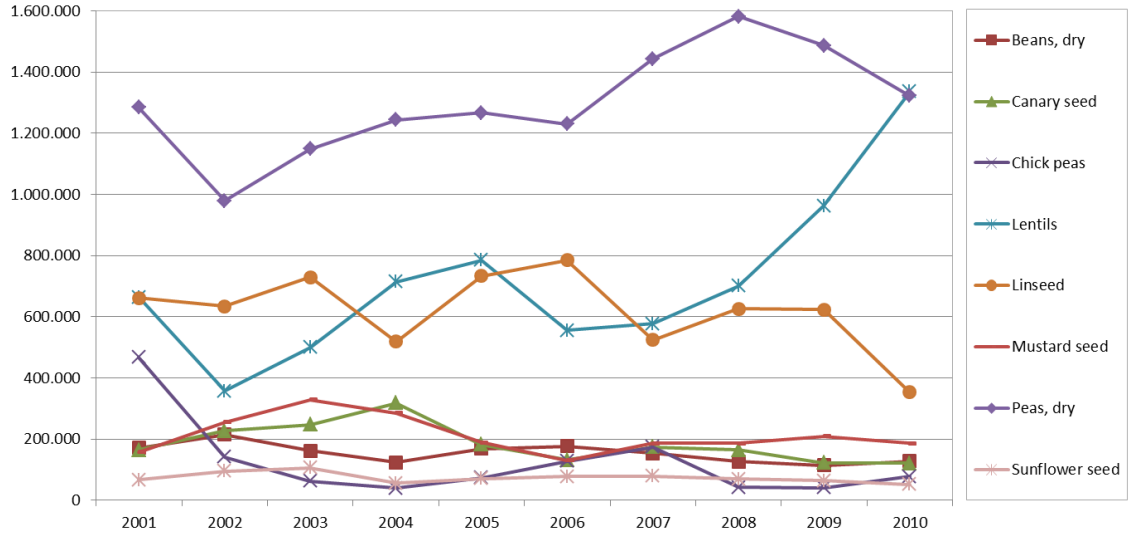
Therefore this paper is aiming for

(a) analyzing the evolution of specialty crop production and marketing in Canada;
(b) looking at farm level economics of specialty crop production in Canada, Australia and Kazakhstan and
(c) drawing some conclusions from the Canadian experience for Kazakh producers and policy makers.

2. Evolution of specialty crop production in Canada

When looking at the Canadian specialty crop production it appears that next to rapeseed peas, lentils and chickpeas are the most important ones which have been growing in acreage rather fast over the last decade (see Figure 1).

Figure 1: Evolution of specialty crops in Canada (in hectare)



Source: FAO 2013, own compilation

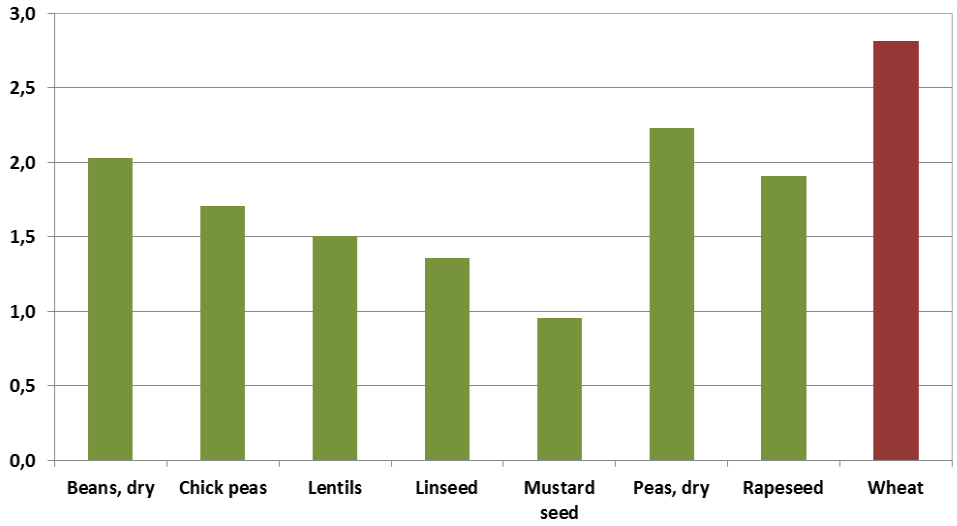
However, there are also minor crops such as canary seed, dry beans, or

[3] In Canada, the attractiveness of special crops was inadvertently amplified over the past 20 years by the delivery and payments systems created around the Canadian Wheat Board monopoly. The quota system regulating when delivery was permitted and the partial payment system at delivery for wheat and barley weakened farm cash flow for 'Board crops' significantly, while special crops and oilseeds (eg. Canola) could be fully converted to cash at any time. The Canadian Wheat Board monopoly was ended in August 2012.

linseed. Altogether these crops currently account for 10 million ha or about 41 % of the entire Canadian crop land. Since 2001 this figure has been growing by 2.7 million ha or 36 %. This growth is mainly driven by rapeseed acreage [4] which went up from 3.8 million ha in 2001 to 6.5 million in 2010.

In order to have a closer look at the agronomical properties of said crops as well as at the issue of "opportunity cost of crop land" yields realized recently are displayed in Figure 2.

Figure 2: Yields of specialty crops vs. wheat (ø 2008 – 2010; in t/ha)

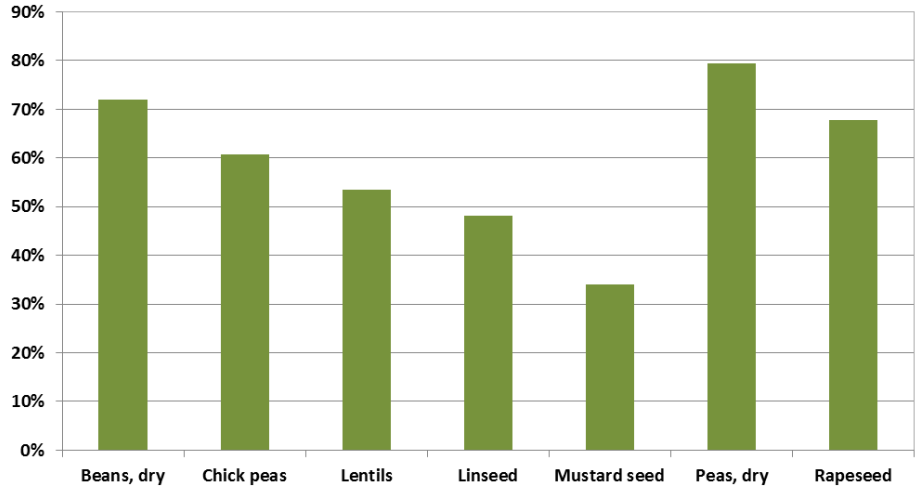


Source: FAO 2013, own compilation

Except for mustard they all are yielding in a range of about 1.5 to 2 t/ha while wheat is at about 2.8 t/ha. When converting these absolute values into ratios Figure 3 can be produced. When putting wheat as 100 % the specialty crops – except for mustard - yield about 50 to 70 %.

[4] Rapeseed figures are not included in the graph. When rapeseed figures are included, all the other lines are rather close to each other at the very bottom of the graph.

Figure 3: Yield ratio specialty crop vs. wheat (in percent)



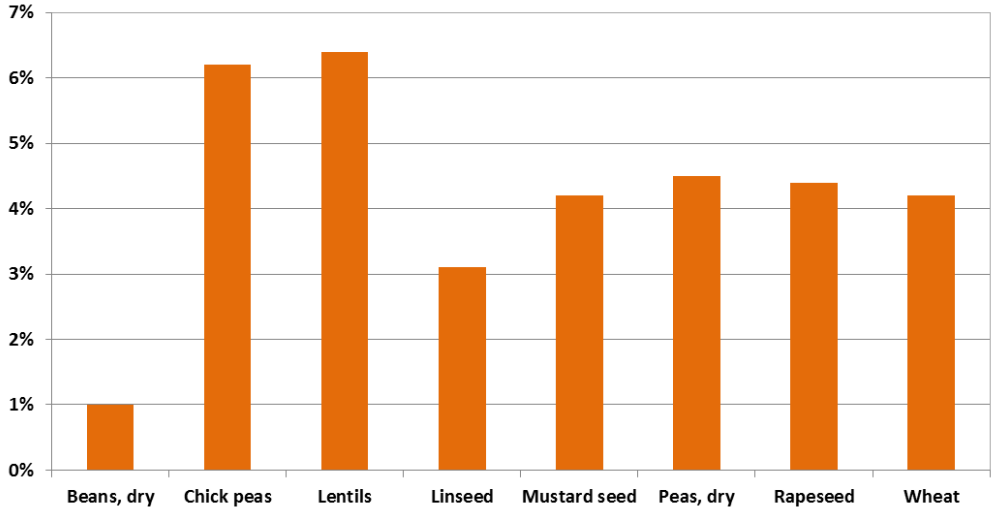
Source: FAO 2013, own compilation

Under more favorable climatic conditions such as in Western Europe or major parts of the USA respective ratios are very often only 50 % or even less. For example in the UK, Germany or in France the most advanced and important specialty crop is rapeseed. Here the yield ratio relative to wheat is predominantly below 50 %[5]. Therefore – all other factors being equal – the hypothesis of relatively favorable agronomic condition for specialty crops in Canada can be confirmed.

What is important to note finally is the potential for yield improvements through more intensive breeding and better agronomical treatment. In Figure 4 the annual growth rates over the last decade are displayed. It shows that yields went up remarkably – except for beans.

[5] Zimmer, Y. (2012): Rapeseed in Central and Eastern Europe - A lot of Room for Growth; working paper 1/2012, http://agribenchmark.org/fileadmin/freefiles/wp/cc_01_rapeseed_Zimmer_eng.pdf

Figure 4: Yields growth Canadian specialty crops and wheat (2001 – 2010; in % p.a.)



Source: FAO 2013, own compilation

In addition the following findings and conclusions are worth mentioning:

(1) Yield growth of chick peas and lentils was completely outstanding – more than 6 % p.a. But also the other crop yields – except for linseed - improved at an annual rate of more than 3 %. This is a clear signal that the agronomical potential of the crops has by far not fully been exploited yet. In other words: More investments in yield improvements through breeding, agronomy and plant protection are very likely to be very promising.

(2) The strong growth in yields is of particular interest because at the same time the acreage of lentils and peas went up rather strongly as well. This means even though new growers have been involved in this crop – and hence had to learn how to grow it – on average the yields improved so much.

(3) When looking at wheat yields a mixed picture can be drawn: one the one hand the annual increase was lower compared to most of the specialty crops but on the other hand an annual growth rate of more than 4 % is very remarkable when compared to most other places of the world. On average global wheat yields went up only 1.6 % over the last 10 years[6]. One of the possible reasons for the extraordinary development in Canada – next to improved varieties and agronomical treatments – is the fact that the density of wheat in rotations went down very clearly. While in 2001 the share of wheat was at about

[6] More information about global wheat production is available at agribenchmark.org/fileadmin/freefiles/cc_team_publications/Zimmer_global_wheat_20101108.pdf

41 % this figure went down to 34 % in 2010. This in turn could mean not only benefited farmers from higher profits by moving to high value crops. At the same time they were able to realize a rotational benefit in the form of improved wheat yields.

3. Economics of specialty crops in Canada and Kazakhstan

So far we have been looking at the evolution of specialty crops only from the purely technical standpoint of acreage and shares in cropping pattern. In this chapter the perspective will be on-farm economics in order to understand the drivers of this development.

This analysis will be based on farm data from ***agri benchmark*** Cash Crop. These figures have been derived from typical farms in major production regions in Canada, Australia and Kazakhstan. The typical farms have been established by national ***agri benchmark*** partners following a standardized method, therefore figures are directly comparable. Unlike conventional profit and loss data these figures are reflecting total cost of production, including opportunity cost for family labor and family owned capital and land.[7] The names of the farms should be read like this: the first two letter code indicates the country where they are from. The figures show the size of the farms in hectare and the finale letter code represents the region in which the typical farm is located.

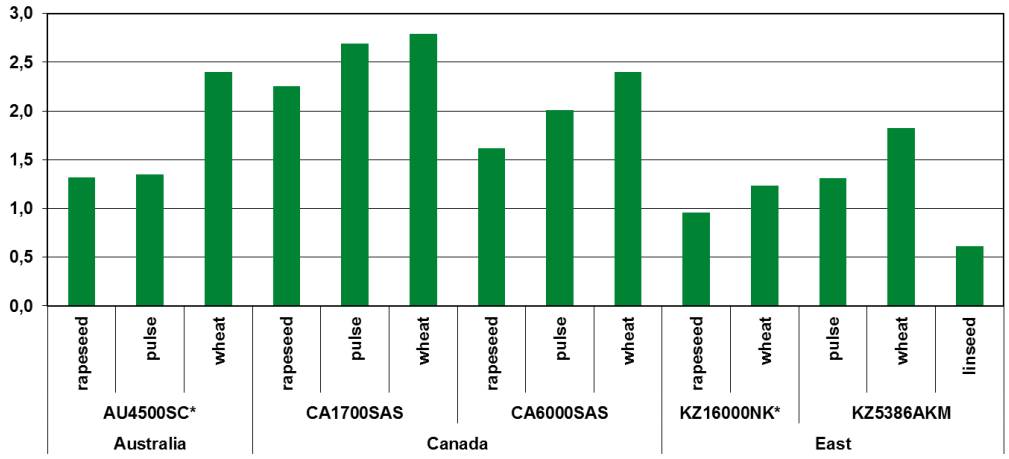
In order to better understand the competiveness of crops in a certain production system it is key to have two indicators: (1) how profitable is it to grow the crop compared to other crops (on-farm competitiveness) and (2) how expensive is it to grow the crop under a given production system compared to other production systems and farming structures (cross-farm competitiveness).

3.1 On-farm competitiveness of specialty crops

The analysis of on-farm competitiveness of crops starts with a look at yield levels for competing crops. In Figure 5 respective figures for the selected farms are displayed. It shows that – in line with general statistics – for the Canadian farm the yields tend to be the highest in this comparison and pulses and rapeseed yields are rather close to wheat.

[7] More detailed information about the concept of ***agri benchmark*** is available at agribenchmark.org/fileadmin/freefiles/3_2_1_ab_cc_sop_0512.pdf

Figure 5: Yields of specialty crops and wheat for ***agri benchmark*** farms in Australia, Canada and Kazakhstan (⌀ 2008/9 – 2011; t/ha)

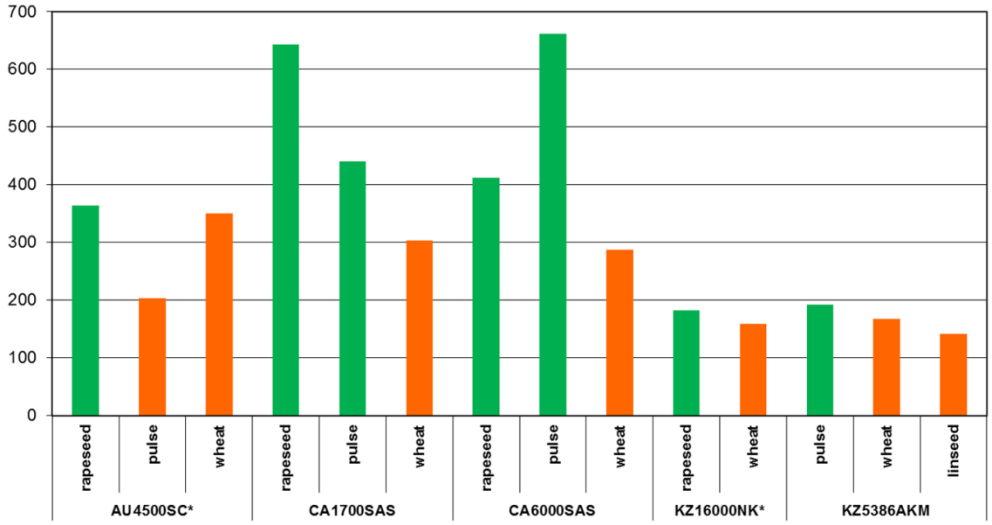


Source: ***agri benchmark*** Cash Crop 2012

In Kazakhstan on one farm the situation is rather similar while in the other the yield ratio is much wider. The same can be said for the Australian farm: pulses and rapeseed are yielding only about 50 % of what can be achieved in wheat.

In Figure 6 gross margin (gross revenue minus direct cost) as the relevant performance indicator for analyzing on-farm competitiveness of crops the results can be found. In this graph the reader will find crops that are better in gross margin than wheat in green and crops that are lower than wheat in orange; wheat itself is also marked in orange. What can be concluded from this graph is that in particular in Canada the specialty crops have been much more attractive than wheat. In both Canadian farms in the four years average the advantage is at least 100 USD/ha and can be as high as more than 300 USD/ha. In principle the situation is similar in Australia and Kazakhstan but (a) compared to Canada the gaps between crops are much smaller and (b) specialty crops are not always performing better.

Figure 6: Gross Margins for specialty crops and wheat for selected ***agri benchmark*** farms (⌀ 2008/9 – 2011; USD/ha)



Source: ***agri benchmark*** Cash Crop 2012

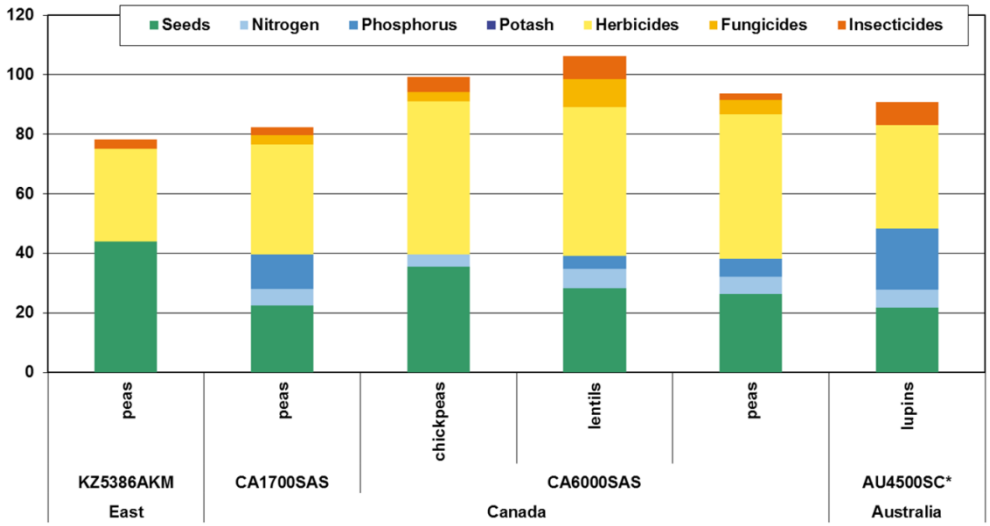
From these findings it can be concluded that (a) there is some evidence that the evolution of Canadian specialty crop production is indeed driven by their profitability and (b) that in principle such a situation might be reproducible in Kazakhstan.

3.2 Cross farming systems competitiveness in specialty crops

Given the strong position of Canada as one of the leading exporters in specialty crops, in this section cost of production per ton will be compared by using data from Kazakhstan and Australia.

In Figure 7 an overview of direct cost per ton can be found. What becomes clear from this graph is that given the diversity in growing conditions and crops direct cost of production is rather homogenous across the board. Secondly, results for the Kazakh farm indicate that at least in principle it should be possible to produce peas at a rather low direct cost.

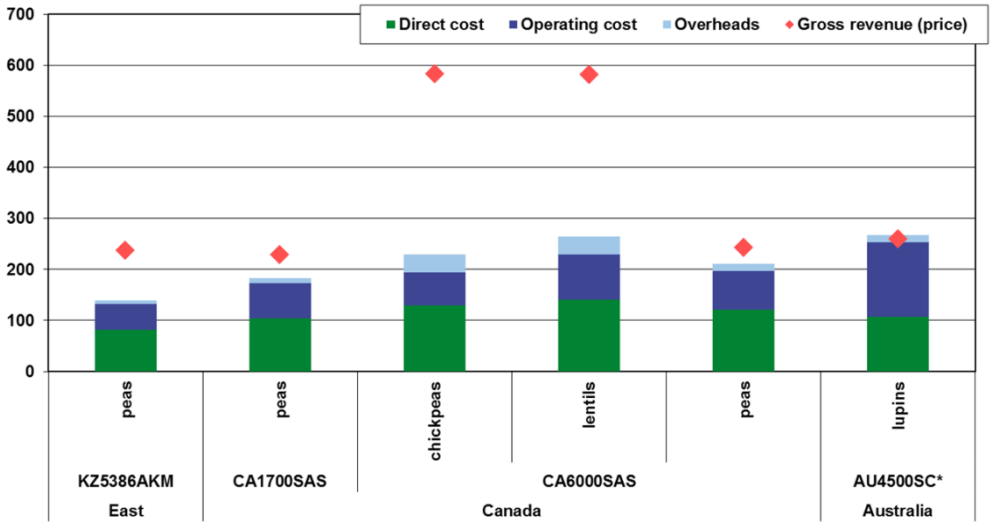
Figure 7: Direct cost in specialty crops for selected ***agri benchmark*** farms (⌀ 2008/9 – 2011; USD/t)



Source: ***agri benchmark*** Cash Crop 2011

When looking at the total cost (excluding land cost) and its composition respective figures are displayed in Figure 8. Is appears that total cost of production are in a range between 150 USD/t for peas from the Kazakh farm and 250 USD/t for lentils at the CA6000SAS and 270 USD/t for lupines from AU4500SC. This in turn means that farm gate prices for these products higher than 300 USD/t should be very attractive for producers. As will be demonstrated in the subsequent section this is indeed a price

Figure 8: Key cost components and returns in specialty crops for selected ***agri benchmark*** farms (⌀ 2008/9 – 2011; USD/t)



Source: ***agri benchmark*** Cash Crop 2012

level that has been achieved very easily in recent years – even when absolute peak years are not taken into account.

Consequently, Figure 8 shows that except for lupines in Australia all other pulses have been very profitable for the typical farms in Canada and Kazakhstan. What sticks out are results for chick peas and lentils on the large Canadian farm CA6000SAS. However, one should note that average prices received over the time span 2008 to 2011 have not been extremely high when comparing it to more recent figures (see Chapter 4 of this paper).

As far as the Kazakh farm is concerned it appears that at least this typical farm is a real "low cost producer" in this comparison. This advantage over the other typical farms is becoming even more pronounced when talking into account that land cost has been omitted from this analysis. While both Canada and Australia have a highly developed and competitive land market with land rents in the range of 70 up to 100 USD/ha in Kazakhstan land at least as of today is "almost for free": The typical farm has to pay land rents of app. 13 USD/ha. Converted into a cost per ton perspective these land cost lead to an increase in total cost of 35 to 70 USD.

Whether or not the cost advantage of the Kazakh farm is enough to offset the disadvantage stemming from the land-locked situation remains to be seen. Further in-depth analysis will be need for the transport and logistics cost for the different possible destinations for exports. The issue of relevant competitors – next to Canada – as well as possible destinations will be discussed in detail in the subsequent section.

4. Selected global specialty crop markets

When considering to expanding a particular crop production systematically for an exporting country such as Kazakhstan the following questions arise:

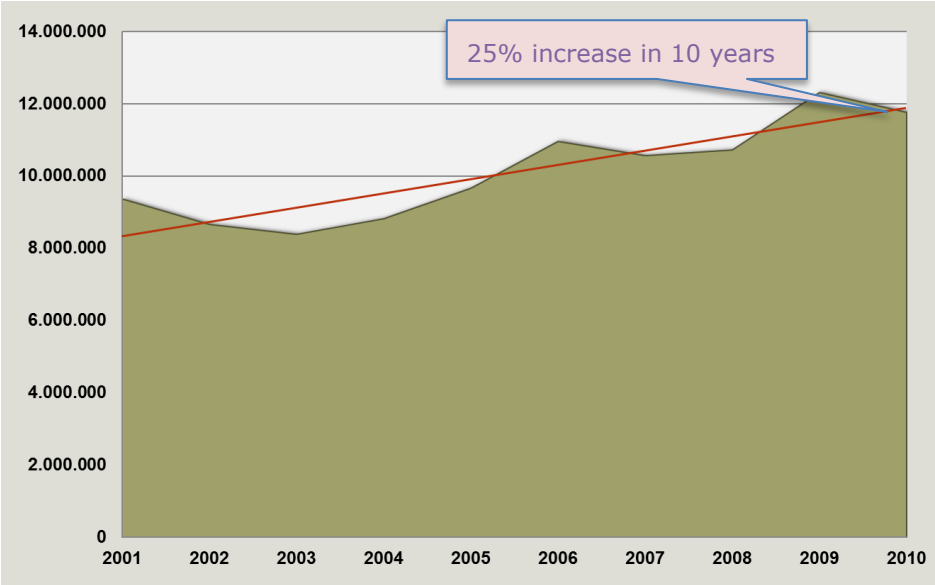
(1) How is the overall market evolving over time? More precise: Does the market grow or is it shrinking?

(2) With whom do we compete in the market?

(3) To whom are we are going to sell the produce?

Therefore this section of the paper does contain information about the evolution of some selected markets for specialty crops.

Figure 9: Global pulse exports (in metric tons)

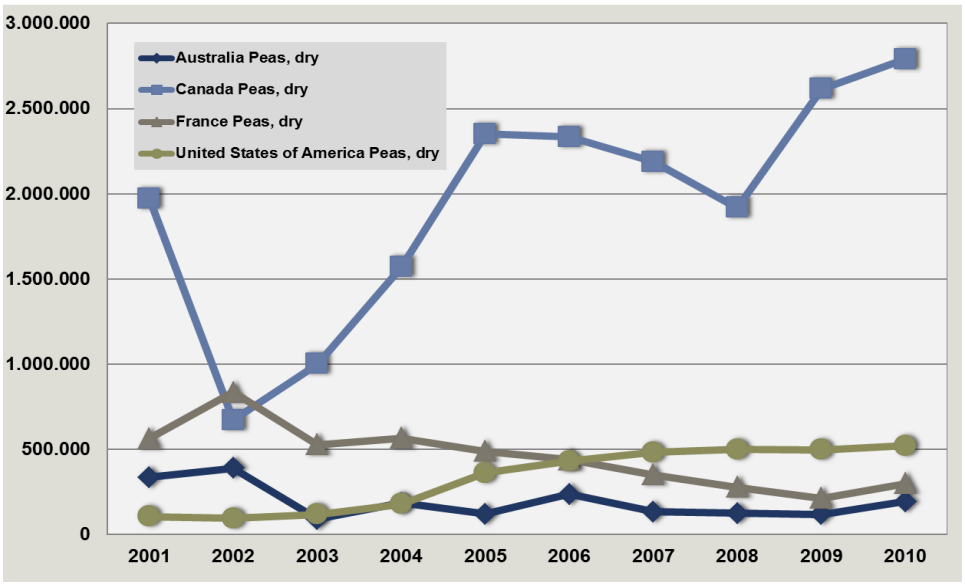


Source: FAO 2012; own compilation

Figure 9 demonstrates the evolution of global pulse (different types of beans, peas and lentils) exports. It shows that there has been an almost constant increase in exports over the last 10 years leading to a 25 % higher export quantity in 2010 compared to 2001.

When considering just major global pea exporters the Figure 10 can be generated. It shows that Canada and the USA were basically the only major producers who were able to significantly increase their exports. And it becomes obvious that Canada is by far the biggest pea exporter.

Figure 10: Major pea exporters (in metric tons)



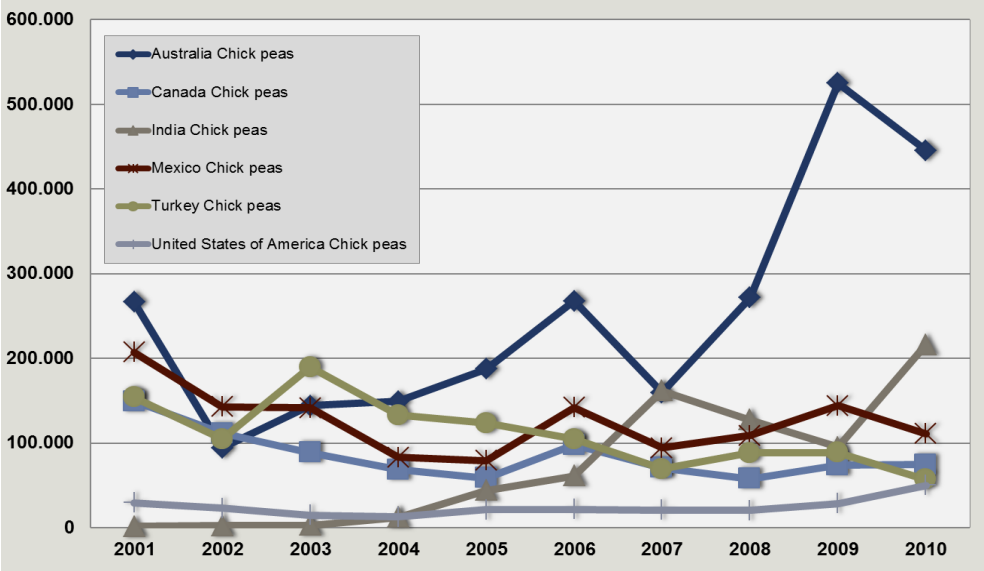
Source: FAO 2012, own compilation

Main importers during the time analyzed here were India, China and Bangladesh. India is by far the biggest importer with an increasing but strongly fluctuating quantity between 0.8 and 1.8 million t. In recent years China and Bangladesh accounted for about 0.5 million t each.

From 2010 onwards pea prices in Canada have been in the range of 360 USD/t – before 2010 they were traded at 240 USD/t – of course at wheat prices of about 140 USD/t or less.

Main chick pea exporters are characterized in Figure 11. Australia was the most important one; all others are rather similar with 0.2 million t or less.

Figure 11: Major chick pea exporters (in metric tons)

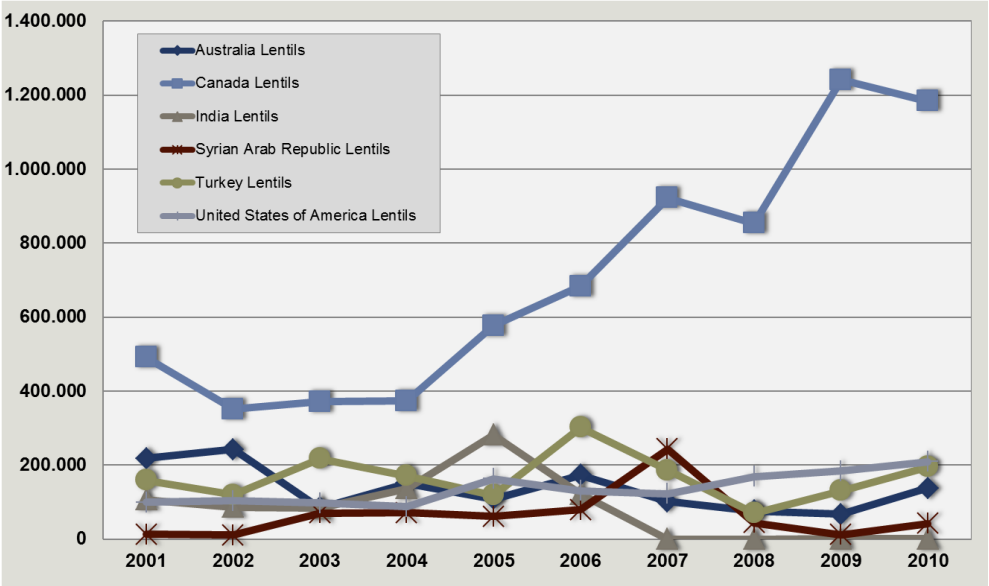


Source: FAO 2012, own compilation

As in peas, India is the most important importer of chick peas with about 0.1 to 0.3 million t. This finding is of particular relevance because in chick peas India is also one of the biggest exporters. Next to India, Pakistan and Bangladesh are major importers followed by Algeria and Spain.

When looking at the global chick pea market the price range is worth mentioning: Canadian producers were realizing about 800 USD/t on average - fluctuating between 600 and more than 1,000 USD/t.

Figure 12: Major lentil exporters



Source: FAO 2012, own compilation

Finally the lentil market will be portrayed here: As can be seen in Figure 12 it's again dominated by Canada with exports of recently up to 1.2 million t. The other relevant exporters such as Australia, Turkey, USA, Syria and India are all more or less in the same league with 0.3 million t max in recent years. India has been exporting for some years but ceased to do so in 2007. In total the global lentil trade grew by about 65 % between 2001 and 2010.

When looking for main importers the commodity has to be divided into red and green lentils. Red ones are mainly shipped to Bangladesh, India, Sri Lanka and Egypt. Green lentils are being imported primarily by Turkey, Algeria, Columbia and Peru.

Canadian growers have been receiving lentil prices in the range of 500 to 800 USD/t.

5. Conclusions

(1) Over the last decade Canadian growers have been very successful in producing and marketing specialty crops globally. Multi-annual ***agri benchmark*** data for typical Canadian farms clearly show that this development was driven by the strong profitability of specialty crops compared to wheat.

(2) This economic performance is driven by two factors (a) the yield ratio between these specialty crops and wheat is relatively close (60 to 70 %) and (b) due to high prices for specialty crops. But these prices

in many cases can only be achieved when product quality is exactly in line with consumer demand in foreign – mainly Asian and African - markets. This implies that one key element in developing a strategy in specialty crops is building-up a core market competence and – based on that – a capacity to train growers how to achieve the desired properties of the product.

(3) When looking at the Canadian experience it seems that one extra benefit from moving into specialty crops stems from the fact that previously rather dense wheat cropping rotations are widened and/or the legumes improve soil properties and thereby an increase in average wheat yields can be realized.

(4) Some first indications from Kazakh ***agri benchmark*** farms suggest that indeed Kazakhstan might have a competitive edge in specialty crops. Not only have they been more profitable than wheat they also have been lower in total cost of production than in any other typical farm in this comparison.

(5) The global markets for pulses and rapeseed have been growing in recent years very strongly. Hence in principle there should be room for additional exports from Kazakhstan.

(6) Kazakhstan of course has the fundamental disadvantage of being a land-locked country. On the other hand the proximity to China, which is not only a big but also a growing importer of pulses, might be a chance to mitigate this disadvantage at least to a certain degree. Compared to Canada, also Turkey might be an attractive destination for Kazakh exports in terms of logistics.

(7) All in all the farm level perspective as well as overall market developments support the assumption that specialty crops such as peas, lentils or linseed might be a promising option to Kazakh agriculture. However, it has to be kept in mind that such a strategy would require significant investments in exploring foreign markets, training of growers and operators in quality management – including harvesting and storage.