

CHAPTER 6

GLOBAL PRODUCTION AND WORLD TRADE

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Abstract: Lentils are a major international pulse crop (4 million Ha harvested in 2005). However, they fall well behind the major cereal and oilseed crops in planted area as well as behind the other pulse crops of peas, chickpeas and beans. Yields tend to be low (global mean of approximately 0.8 t/ha over the last 16 years) with 95% of the crop raingrown. There are three major areas of production N America, the Indian sub continent and Turkey. There are other areas of production in Australia, Iran, Syria and China. Between them these areas account for over 90% of global production. There are two major groups red (70–80%) and green lentils with Canada being the largest global producer of green lentils. Lentil production in the developing world is relatively static while the population in South Asia, where most lentils are consumed, has been rapidly increasing. This has left countries such as India with a very low supply per head of population. This deficit has to be made up by increases in world trade. The major world player in lentil exports is Canada which in 2005 exported 576,000 t. Other major exporters in the same year were Turkey (118,000 t), Australia (108,000 t) the United States of America (160,000 t). Most importing countries import relatively small quantities from a number of countries. In 2004 the largest lentil importers were Bangladesh (110,000 t), Sri Lanka (93,000 t), Egypt (89,000 t) and Colombia (63,000 t). A recent nine month ban by India on lentil exports has lead to a sharp increase in their price on the world market. In the past some countries, such as Turkey, imported lentils from Canada, processed them, and then re-exported them

1. INTRODUCTION

Traditionally lentils have been consumed where they are grown as a peasant crop. Approximately 70% of world lentil production is consumed in the country where they are grown (Agriculture and Agri-Food Canada, 2002c). Lentils are grown world wide

as a dryland crop with relatively little grown under irrigation as they respond poorly to irrigation and the high inputs that are characteristic of the system. For example the The Southeastern Anatolia Project, in Turkey planned to have 7.5% of the area (envisaged at 1.7 million hectares at completion) sown to lentils whereas the actual amount sown is only 1.5% (Anonymous 2007). Lentils are not irrigated in Canada, USA or Australia. Some irrigated cropping occurs in various parts of Asia. However, it tends to be very small with less than 0.2% of the irrigated area in Vaishali under lentils (Reddy, 2006) and less than 10% of the total pulse crop being irrigated in India (Gupta 2003). Thus all statistics given are dominated by dry land production.

In countries such as India in the last 40 years average lentil yield has hardly changed compared with increases in cereal yields such as rice and wheat. In 1961 lentil yield in India was 453 kg ha⁻¹ by 2004 it had only risen to 760 kg ha⁻¹ (FAOSTAT 2007). Over the same period the population of India rose from 439 to 1,029 million (Registrar General of India 2007). Bangladesh, in the same region, has had considerable population growth and is now home to more than 147 million people (CIA 2007) while the population of Pakistan went from 40 million to 136 million by 1995 and is predicted to reach 357 million by 2050 (IIASA 2007). Overall IIASA (2007) predicts that most world population growth will be in Asia and among countries where lentil is a common item of diet. Population growth will be high in India, Pakistan, and Bangladesh. Given all of these countries have limited available land, and water, to further increase pulse grain production, the shortfall in production will have to come from significantly increased imports from developed countries such as Canada and Australia.

2. GLOBAL PRODUCTION SITUATION

Lentils fall into several categories based primarily on cotyledon and seed coat colour. Green and red lentils are the predominant lentil types grown, consumed and traded internationally. Green lentils have a yellow cotyledon and pale green seed coat and red lentils have an orange cotyledon and usually a dark seed coat, although the dominant seed coat colour varies between countries. Green lentils are typically cooked and consumed whole and red lentils split for use in products such as soups and dhal. Red lentils constitute 70–80% of world production (Patterson 2006). These two groups may be further subdivided based on size (small, medium and large). Generally the green lentils are also larger sized than red lentils, however, there are small green and medium-large red lentils. In addition there are a range of minor niche varieties (low tannin, black, dark green, speckled and brown) which may be locally important. For example, the French have traditionally grown and prefer the DuPuy type lentil that has a mottled green and blue seed coat and yellow cotyledon and a brown dotted lentil with yellow cotyledon is consumed in Spain. Internationally the minor varieties only represent a small component of trade, constitute less than 3% of total Canadian production (Skrypetz 2000), less than 1% of production in Australia (Materne pers. comm.). In the USA medium green lentils and the Spanish brown type variety Pardina are grown with 20,000 t of Pardina exported to Spain annually. FAO figures group all the lentils types into a single category (FAOSTAT, 2007). The type of lentil produced and preferred in

traditional lentil growing countries tends to be the type grown for many centuries. Therefore, being a relatively newly traded commodity, export orientated countries are targeting the production of types traditionally grown in importing countries.

Production in Australia, and the Indian subcontinent region is dominated by red lentil production (Materne, pers comm 2007). Turkey also produces mainly red lentils but also approximately 6% green lentils (DeGraaf 2004) a situation similar to Syria. Alternatively Canadian production has shifted from 13% red lentils in 1998–1999 (Skrypetz 2000) to the present situation of approximately 56% red lentil production (Patterson 2006, Skrypetz 2006). Largely due to a decrease in green lentil production as a result of low prices. The type of lentil imported and consumed in regions depends on local preferences, for example, Spain preferring brown lentils and France the dark green speckled lentils and Algeria the large green lentils (Anonymous 2005).

While locally important and a valuable pulse crop in many regions lentils are a relatively minor crop on a global scale. In 2004 total global lentil production was approximately 4×10^6 metric tonnes (Figure 1) compared with 23 for beans, 12 for dry peas 8.5 for chickpeas 206 for soy beans and 626 for wheat (FAOSTAT 2007). Lentils are grown in many countries but production is dominated by India, Canada and Turkey with annual production of 2,125,000 tonnes or 61.4% of world production in 2006. A positive trend in lentil production is largely due to increased area rather than increasing yields (Figure 1). If demand countries to rise, due to population and economic growth, then the current production trend increase (2.5% per year) is likely to continue and production will increase to 5,000,000 tonnes by 2020. Increased production will primarily come from the benefits of research and new varieties (chapter 12), but also from increased area, predominantly in current lentil growing regions. For example, an increase in production in Nepal has come from replacing fallow with lentil and Canada could potentially return to its 2005 production area of 900,000 ha.

Lentils are also predominantly a subsistence crop with 33% of the global crop traded internationally between 2000/1 and 2004/5 years (FAOSTAT 2007). Canada has dominated world trade for this period accounting for 39% of global exports with Turkey next at 14%, Australia 15%, India 11%, USA 8% and Syria 3%. In total these 6 countries constitute over 90% of global exports. Imports are more widely distributed and more variable with 30 separate countries accounting for only 85% of imports. Major importers have been Bangladesh, Sri Lanka and Egypt each of which has imported over 100,000 mt in at least 1 year between 2000 and 2005. Import volumes can be variable depending on local crop production and political (eg tariff) influences. In 2000 Turkey imported 141,000 mt of lentils compared with only 6,000 in 2004 and 64,000 in 2005. However, it should be remembered that countries such as Turkey, Egypt and Dubai may import lentils for processing and then export.

Lentil production varies widely between years in response to domestic weather conditions, carry over stocks, world prices and farm policies (Figures 2–4). For example Australian lentil production and yields have fluctuated wildly in response to climatic conditions over the last 5 years (Table 1 taken from data supplied by Pulse Australia, 2007). Alternatively, yields in India have been more reliable but are low.

Canadian production has responded strongly to market oversupply of green lentils. Total lentil production in 2005/6 rose to 1.3×10^6 metric tonnes from 0.3×10^6

Table 1. Australian lentil production statistics from 2002 to 2006

Year	Harvested Yield 000 mt	Planted Area 000 ha	Average yield t/ha
2002	45	165	0.27
2003	160	131	1.22
2004	93	131	0.7
2005	209	113	1.85
2006	38	152	0.25

Compiled from http://www.pulseaus.com.au/statistics_and_market_overview/crop_production/

metric tonnes in 2002/3. In the same period area seeded rose from 600–900 kha. This resulted in carry over stocks of 0.6×10^6 metric tonnes of predominantly green lentils going into the 2006/7 season (Skrypetz 2007). The grower response was a drop in planted area to less than 600 kha in 2006 a shift towards lower yielding red lentils and an expected halving of total production (Figures 2–4).

Government policies also have an impact on production and trade. For example, it is no coincidence that lentil production has increased since the introduction of the U.S. Farm Bill during 2002 which provides Loan Deficiency Payment for US lentil producers if prices fall below a predetermined level. World lentil production has generally been trending upwards from increases in both yields and area harvested (Figure 1). While fluctuating widely most large producers have been increasing production (Figure 2) with the exception of Turkey where the lentil harvested area fell by 50% between 1990 and 2004. This was partially off set by increasing yields (up from 0.9 to 1.2 t/ha; Figure 3).

3. GLOBAL PRODUCTION FIGURES

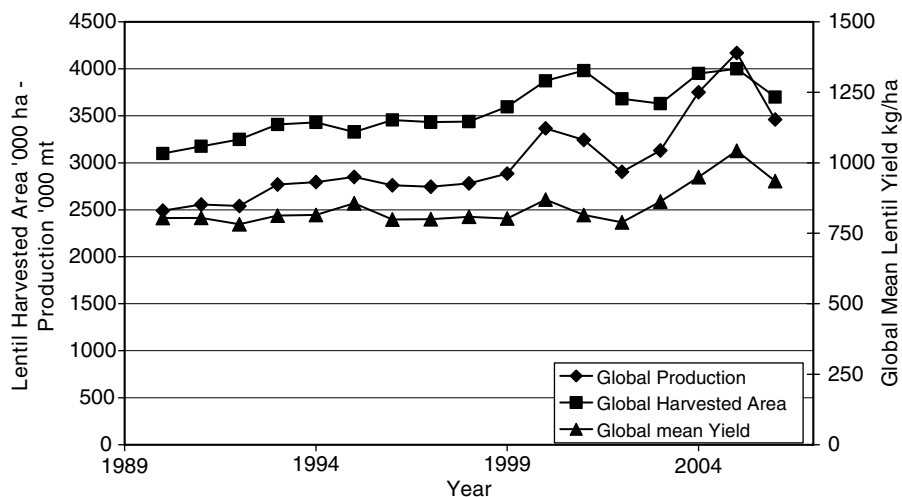


Figure 1. Global production, harvested areas and mean yields for lentils from 1990 to 2006. Data for 2006 are estimates. Data compiled from FAOSTAT 2007, Skrypetz 2006 and Pulse Australia 2006

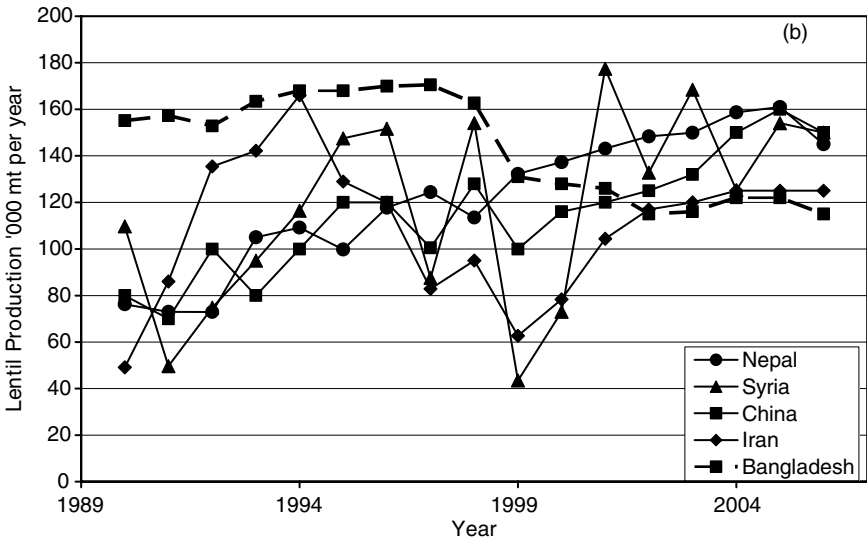
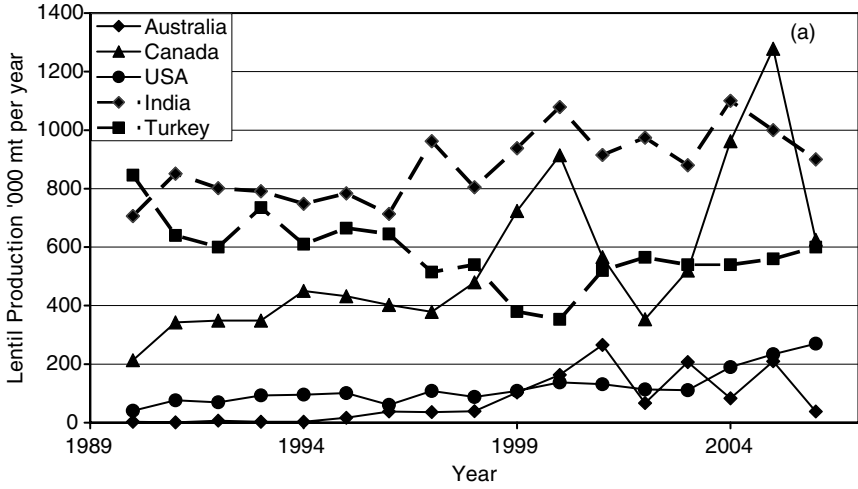


Figure 2. Lentil production for 5 largest producers (a), and next 5 largest producers (b) from 1990 to 2006. Data for 2006 are estimates. Data compiled from FAOSTAT 2007, Skrypetz 2006 and Pulse Australia 2006

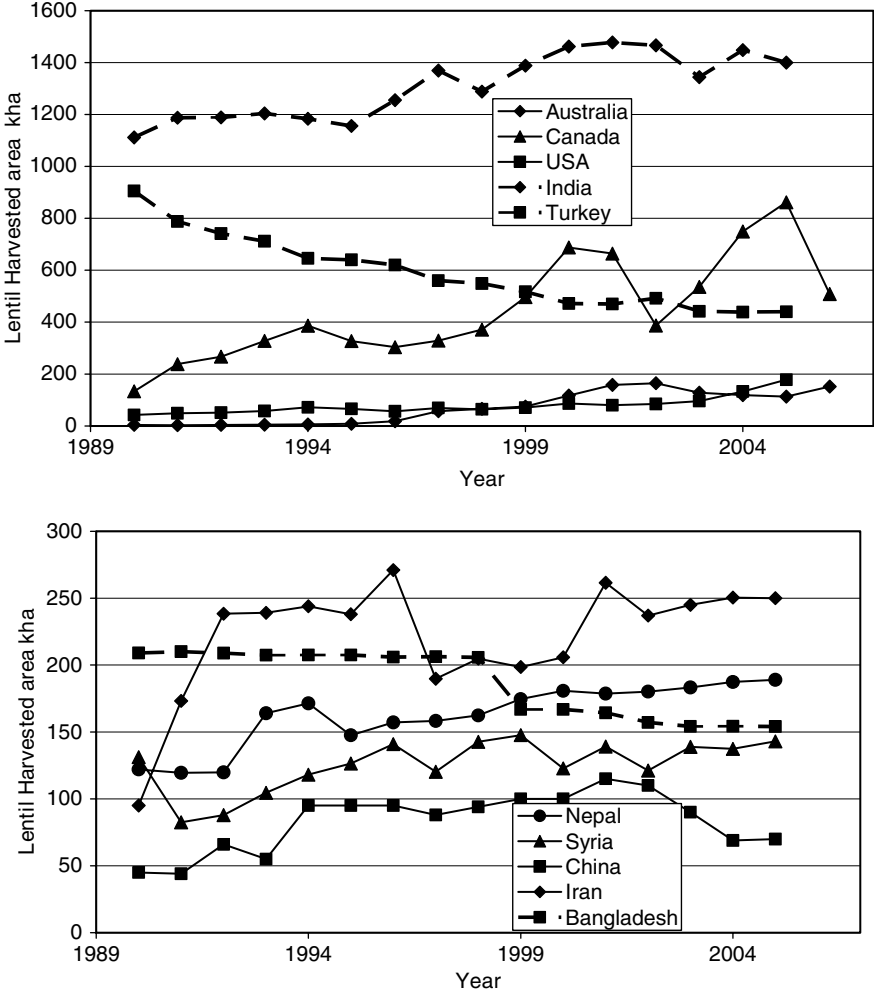


Figure 3. Lentil harvested area for 5 largest producers (a), and next 5 largest producers (b) from 1990 to 2006. Data for 2006 are estimates, area for Australia 2006 is planted area. Data compiled from FAOSTAT 2007, Skrypetz 2006 and Pulse Australia 2006

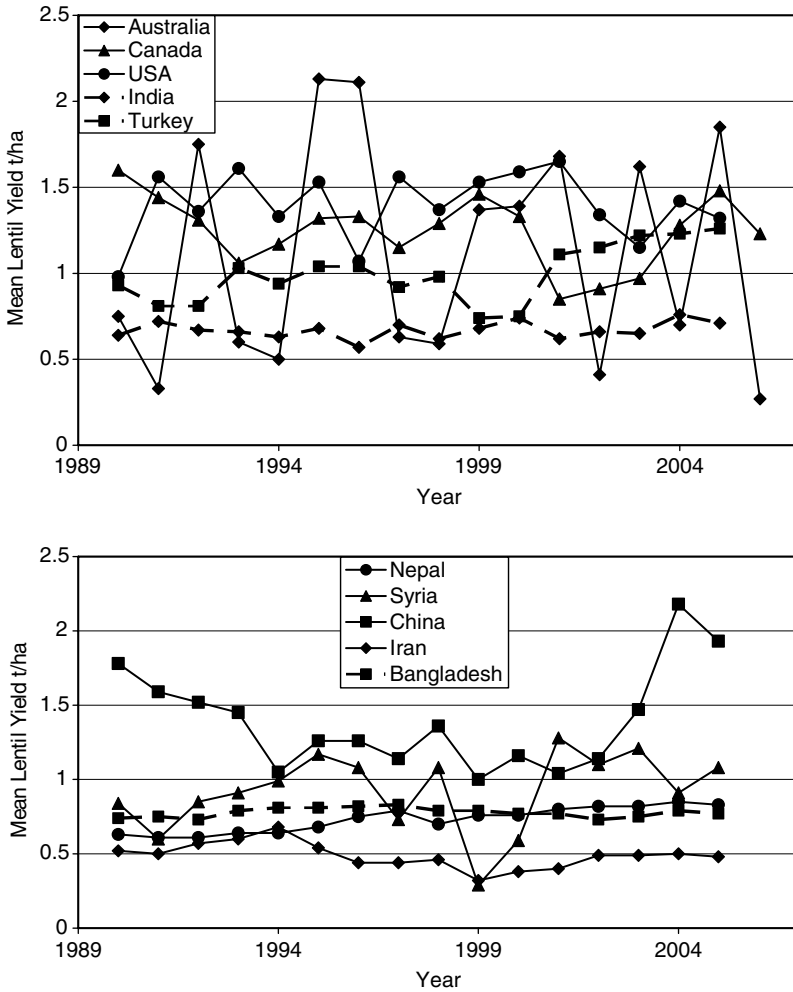


Figure 4. Lentil mean yields per ha of harvested area for 5 largest producers (a), and next 5 largest producers (b) from 1990 to 2006. Data for 2006 are estimates, yield for Australia 2006 is relative to planted area. Data compiled from FAOSTAT 2007, Skrypetz 2006 and Pulse Australia 2006

4. LENTIL AVAILABILITY

The substantial increases in south Asian populations outlined above have had a negative effect on the availability of lentil seed for human consumption (Table 2).

In countries such as Pakistan and India lentil availability is little more than 1 to 2 g day⁻¹ (FAOSTAT 2007). Lentil producing countries, where lentils are regularly consumed, such as Nepal, Syria and Turkey have a higher daily consumption of 7 to 12 g. Spain is a European country where there is a long tradition of consumption

Table 2. Daily per capita availability of lentil for human consumption between 1999 and 2004 in countries where lentils are a major item of human diet (g day^{-1}) (FAOSTAT, 2007)

Country	Year					
	1999	2000	2001	2002	2003	2004
Bangladesh	3.1	3.0	3.1	3.1	4.2	4.0
Colombia	3.3	3.4	3.5	3.8	4.2	3.8
Egypt	3.2	3.1	3.1	3.0	3.1	3.0
India	1.9	2.1	2.0	2.1	1.8	2.1
Nepal	9.8	14.0	12.9	12.0	12.0	12.5
Pakistan	1.4	1.3	1.7	1.6	1.9	1.2
Spain	3.4	4.2	3.9	3.9	3.8	3.9
Sri Lanka	10.7	8.5	13.6	12.1	12.7	13.3
Syria	6.5	8.3	10.2	11.8	12.4	7.0
Turkey	8.9	10.9	11.9	11.9	7.1	8.0

of grain legumes. Daily lentil consumption in Spain is about 4 g day^{-1} (Table 2). However, Spain is a country where large amounts of meat, poultry, fish and eggs are also consumed as protein sources (FAOSTAT 2007). This is in contrast with India where devout Hindus tend to be vegetarians and are thus much more reliant on plant protein (Price et al. 2003). Therefore any shortfall in local production has to be made up by the purchase of imported lentils (Agri-Food Trade Service 2005).

5. LENTILS ENTERING WORLD TRADE

Compared with other grain legumes total world lentil production is low at about 4 million t (Figure 1). Of this total production between 2000 and 2004 the total amount of lentil being traded was approximately 1.1 million t i.e. about 27% of the total world crop (Skrypetz 2006). Most lentils that enter world trade are grown in countries where lentils are not a major item of diet (Table 3). The proportion of the local crop marketed internationally varies from almost none (CRNIndia 2007) in India to a large proportion of the crop in Canada (Skrypetz, 2006).

In June 2006 India put an embargo on lentil, and other pulse, exports. This was initially to 26 December 2006 but was later extended to 31 March 2007 (Subramani, 2006; Statpub 2007). The move drew negative responses from both Sri Lanka and Bangladesh both of which had imported significant quantities of lentil from India (Subramani, 2006). It also led to an increase in the price of lentils on the world market.

6. MAJOR LENTIL EXPORTERS

CRNIndia (2007) list, in order of decreasing quantity exported, Canada, Turkey, Australia, India, the United States, Syria, China, UAE, Nepal and Belgium as the principal lentil exporters. However, the first seven of these countries account for

nearly 90% of total world lentil exports. Table 3 gives the exports of these countries from 1999 to 2005.

Over the period reported exports have fluctuated quite widely in major producing countries. Canadian exports varied from 352,000 t in 2002 to 519,000 t in 2000. Statistics Canada gives its export data for 2005/6 as 669,000 t and forecasts exports of 730,000 in 2006/7, and 580,000 t in 2007/8 (Skrypetz 2007) these values are being highly influenced by carryover stocks which rose from 55,000 t in 2002/3 to 590,000 t in 2005/6. Over the same period Australian exports ranged from 25,000 to 242,000 t and those of the United States from 76,000 to 160,000 t. As the vast majority of lentils are grown as a rain fed crop (Chapter 11) these wide year to year variations in exports volumes were probably related to varying climatic conditions in the major exporting countries.

7. MAJOR LENTIL IMPORTERS

Table 4 lists those fifteen countries that, on average, import more than 20,000 t of lentil in 2004 (The last year for which complete export figures are available in FAOSTAT). A further 13 countries imported between 18,000 and 6,000 t. The rest of the world accounted for approximately a further 180,000 t. Generally importing countries import relatively small amounts of lentils.

The largest single lentil importer is Bangladesh which in recent years has imported more than 100,000 t each year. In terms of import volumes it is followed by Sri Lanka (93,000 t), Egypt (89,000 t), Colombia (63,000 t), Spain (41,000 t) Algeria (39,000 t) and Pakistan (36,000 t). All other importing countries import less than 32,000 t year⁻¹ (Skrypetz 2006).

8. LENTIL RE-EXPORTS

A number of countries have imported lentils and then re-exported them depending on local supply and demand. In the Middle East The United Arab Emirates is

Table 3. Exports of lentils by major exporting countries from 1999 to 2005 (1,000 t) (FAOSTAT 2007, Skrypetz 2006)

Country	Year						
	1999	2000	2001	2002	2003	2004	2005
Australia	25	134	218	242	85	150	108
Canada	417	519	491	351	371	374	576
China	22	18	15	21	33	38	34
India	147	191	106	86	83	137	<i>n/a</i>
Turkey	105	100	159	119	217	171	118
Syria	40	17	12	11	70	71	<i>n/a</i>
United States	76	80	99	103	97	88	160

Table 4. Major lentil importers 2000 to 2005 (1,000 t) (Skrypetz, 2006)

Country	Year					
	2000	2001	2002	2003	2004	2005
Algeria	72	47	63	67	39	86
Bangladesh	37	47	63	123	110	n/a
Colombia	67	50	65	53	63	67
Egypt	77	113	100	61	89	n/a
France	36	32	31	32	27	33
Germany	37	26	21	21	24	20
India	21	87	67	38	27	n/a
Italy	28	28	27	31	27	28
Mexico	26	31	29	29	31	30
Pakistan	37	68	67	81	36	n/a
Peru	25	28	27	20	25	n/a
Saudi Arabia	15	25	21	24	26	n/a
Spain	50	47	47	47	41	54
Sri Lanka	80	91	107	91	93	n/a
Sudan	22	14	20	14	32	n/a

responsible 80% of total pulse grain imports into the region. However, it is estimated that 60% of these imports are processed in some way, repackaged, and sold to India and other local countries (Kizirian and Taha 2007). Turkey both imports and exports lentils (Sarigedik 2006). Turkish imports are mainly green lentil and exports mainly red lentil. Formerly, Turkey used to import large quantities of lentils from Canada which were re-exported. However, since 2000 changes in policy in Turkey have made it more difficult to import and re-export large quantities of lentil (Agriculture and Agri-Food Canada (2002a).

India also imports lentils and after processing them re-exports some of them to Sri Lanka and Pakistan (Agriculture and Agri-Food Canada (2002c). Statpub (1998) reported that only very small amounts of Chinese lentils were re-exported. Thus although a proportion of world lentils that enter trade is subject to re-exportation it would appear that at present the total amount involved is relatively small.

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