

A COMPARISON OF FLAX AND CANOLA PRODUCTION IN SASKATCHEWAN

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Flax has a long history in Saskatchewan with production figures available back to 1916. It has been a profitable crop for the Province and we obviously have a lot of experience in growing flax. However, it is fair to say that its prominence as an oilseed crop has long ago been lost to canola, a crop that was first introduced here in 1943. Canola production greatly exceeds that of flax and it is a commonly held belief that canola yields are substantially greater than that of flax. Figure 1, in which each point is an average five year yield, shows that measured on a weight per acre basis canola yields are indeed greater than flax. There are two significant points about the figure. First this difference in yield is steadily narrowing and secondly average provincial canola yields have not increased since the late 1970's while flax yields have improved.

Figure 1.0

Figure 2.0

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Figure 2 shows flax yields expressed as a percentage of canola yields and indeed there were several times when flax yields were nearly 50% of canola. It was not until the 1970's that flax yields had climbed to 80% of canola but after two decades of fairly consistent improvement they are now at 96.5% of canola yield.

If this 5 year moving average of flax versus canola is projected over the next 20 years then 5 year average flax yields should equal canola yields by the year 2000 (Figure 3). By the year 2015 province wide flax yields should be 10% greater than canola.

Figure 3.0 Projection of 5 year moving average of the relative yield of flax versus canola until 2015.

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Saskatchewan Crop Districts are presented in Figure 4. If we look at the relationship between flax and canola yields within some of these Crop Districts (Figures 5 - 14) it generally shows that flax yields greater than canola in the traditional canola areas, 5B (Figure 10) and 9A (Figure 13) for example. A 3-year moving average was used with the Crop District data because only data back to 1981 was available to the author for Crop Districts. In districts that have a shorter history of canola production, such as 1B (Figure 6), canola yields are higher than flax.

Figure 4.0 Saskatchewan Crop Districts

Figure 5.0

Figure 6.0

Figure 7.0

Figure 8.0

Figure 9.0

Figure 10.0

Figure 11.0

Figure 12.0

Figure 13.0

Figure 14.0

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I believe the main reason that canola yields are static in the Province is disease, the result of pushing canola production and reducing rotation intervals. Soil borne diseases such as sclerotinia and blackleg have built up under this intense production system. This build-up in soil borne diseases has not had time to occur in the non-traditional canola areas.

Flax does not share these disease problems with canola and therefore, is not affected. The improvement in flax varieties and production methods are thus revealed. In other words they are not masked by disease. I believe that if oilseed production is to continue to increase in Saskatchewan that flax must be a part of a provincial oilseed strategy.

If the yield of flax is so good what is holding back its being grown on more acres in Saskatchewan? Flax is grown for the oil in its seed. However, unlike canola, it is an industrial oil. Other than for a very small health food market it is not used as an edible oil. The demand for industrial linseed oil is static and in fact has declined during this century, in direct contrast to what has happened to edible oils such as canola, soybean and sunflower (Figure 15). Therefore, what has held back flax production in Saskatchewan is the lack of an edible oil market for the crop.

Fortunately, and as result of research in the 1980's edible oil flax varieties have and are being developed. Traditional flax oil (linseed oil) is very high (>50%) in the fatty acid linolenic. This fatty acid is what makes flax suited and demanded for industrial purposes but not desired for edible oil purposes. Research programs in Australia and here at the Crop Development Centre have independently developed flax varieties in which the linolenic acid is nearly absent from the oil. The Flax Council of Canada has chosen the name 'solin' to be used as a generic name for all low linolenic acid flax. The Council will also be applying to the United States for GRAS status for solin and its products. United Grain Growers has estimated that in 1995 they will be contracting for 300,000 acres of their solin variety **Linolatm947**.

Figure 15 The world average annual production of soybean, sunflower, rapeseed and flax for three five year intervals.

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Oilseed crops will become even more important in the future in Saskatchewan than they already are now. The main reason for this will be increased world demand for edible vegetable oils. Per capita consumption of oils and fats is projected to increase into the next century (Figure 16). World population is continuing to rise (Figure 17). Therefore, world demand for oils and fats will increase by nearly 50% by the year 2010 (Figure 18).

Figure 16.0

Figure 17.0

Figure 18.0

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It can be reasonably argued that canola production (acreage) is at its maximum in Saskatchewan. If Saskatchewan is to participate in meeting this increased demand for edible vegetable oils it will need new edible oilseed crops. Certainly canola mustard presents one such opportunity but solin presents another. Not only has flax been grown in Saskatchewan outside of the traditional canola area but it is a logical rotational alternative to canola in the traditional canola areas. Longer canola rotations should lead to greater canola yields and having solin in this rotation should lead to greater edible oil production in this Province.

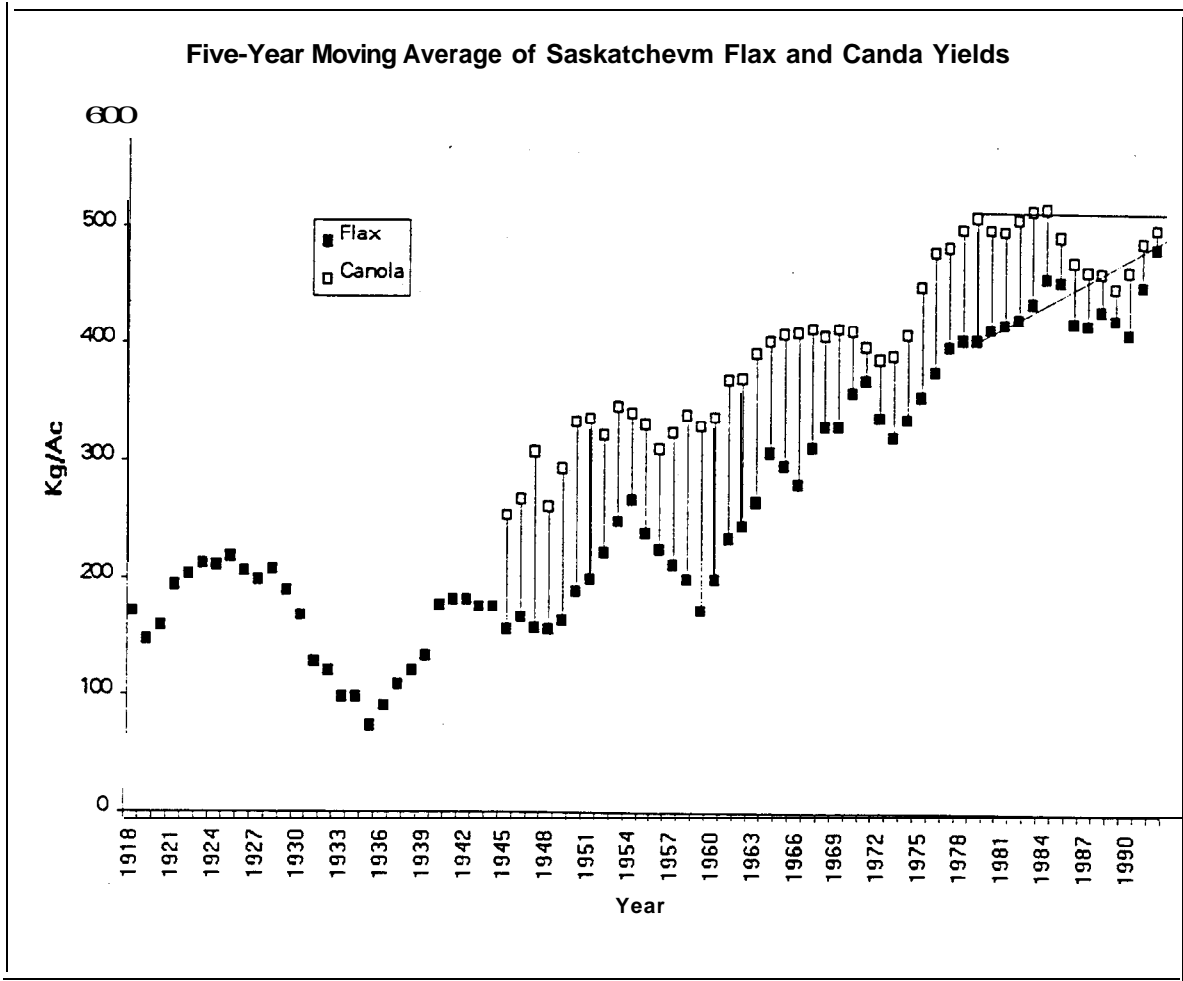


Figure 1.

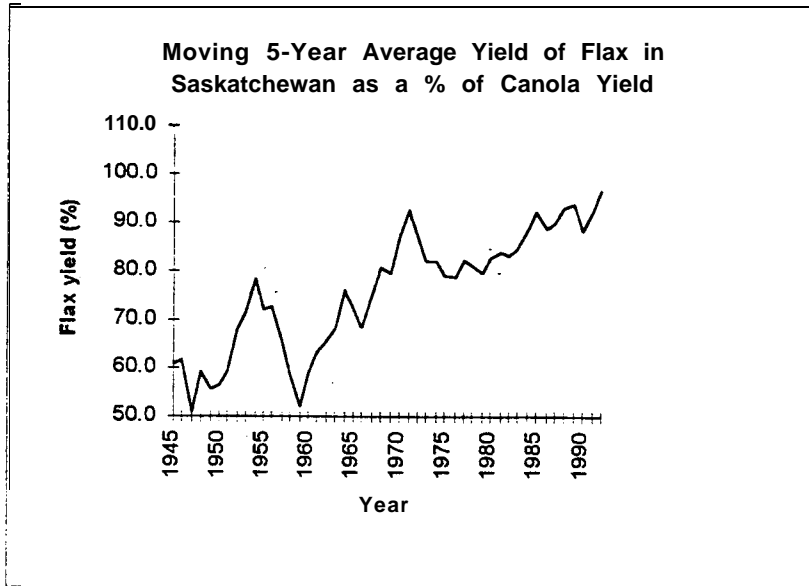


Figure2

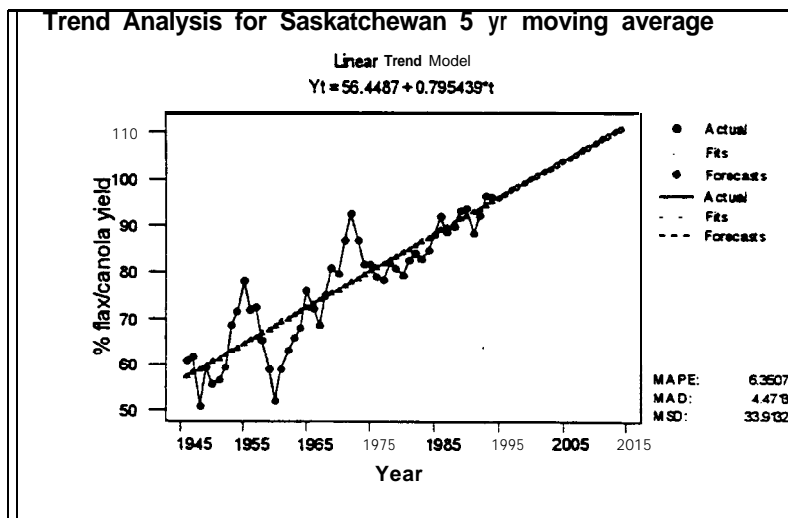


Figure 3. Projection of 5 year mowing average of the relative yield of flax versus canola until 2015.

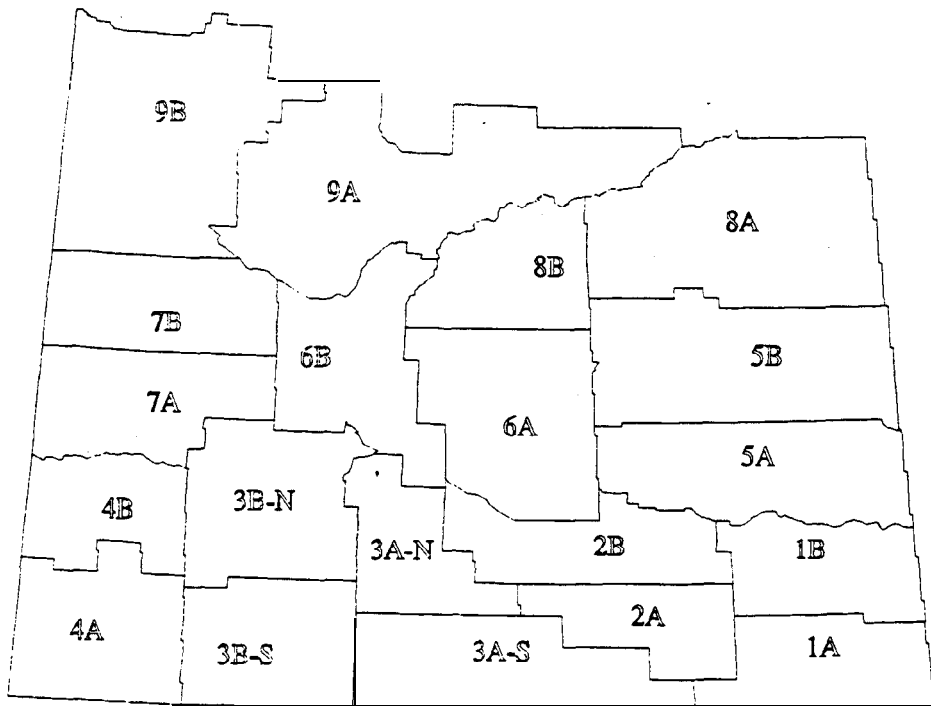


Figure 4. Saskatchewan Crop Districts

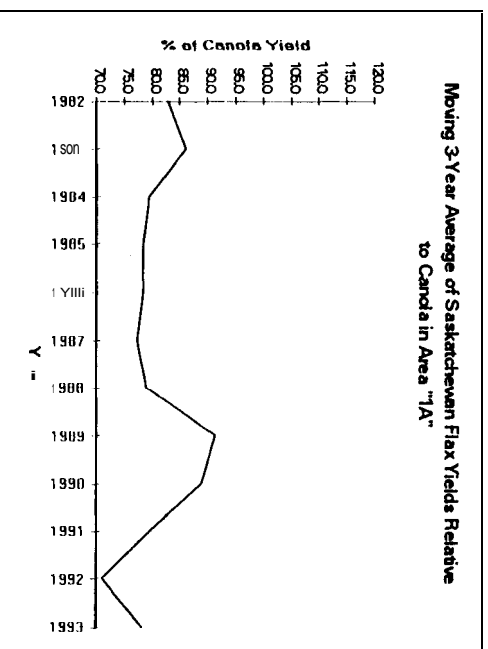


Figure 5

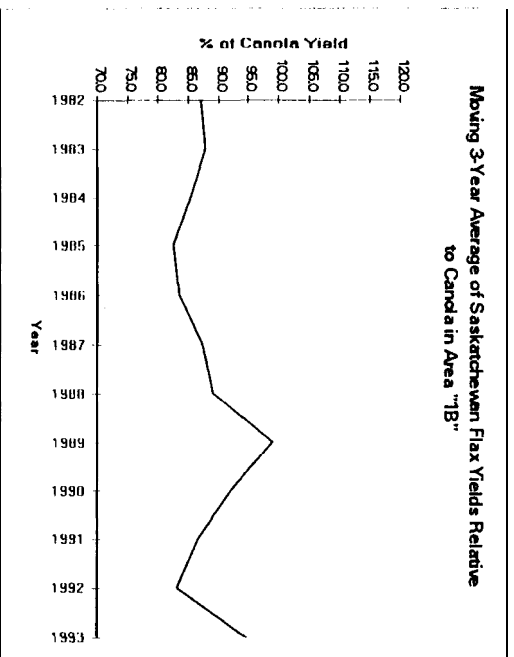


Figure 6.

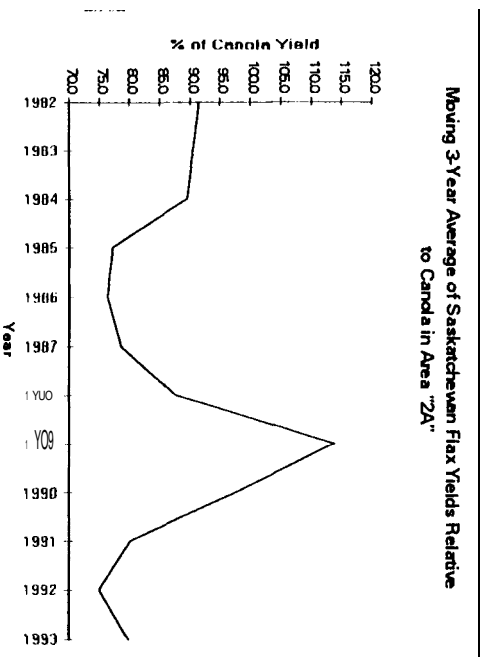


Figure 7

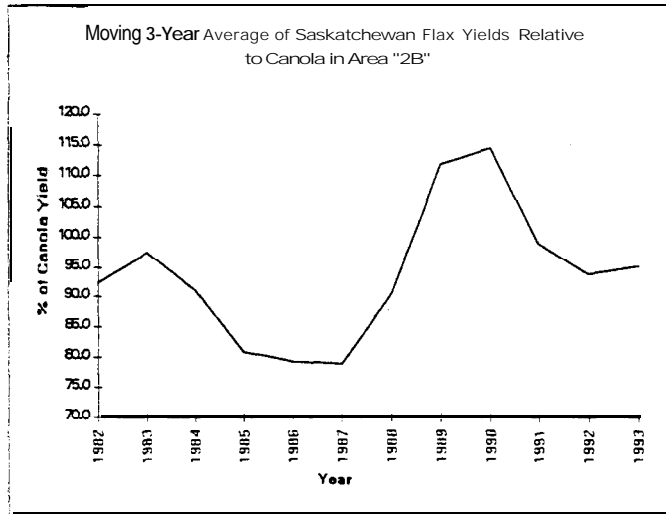


Figure 8.

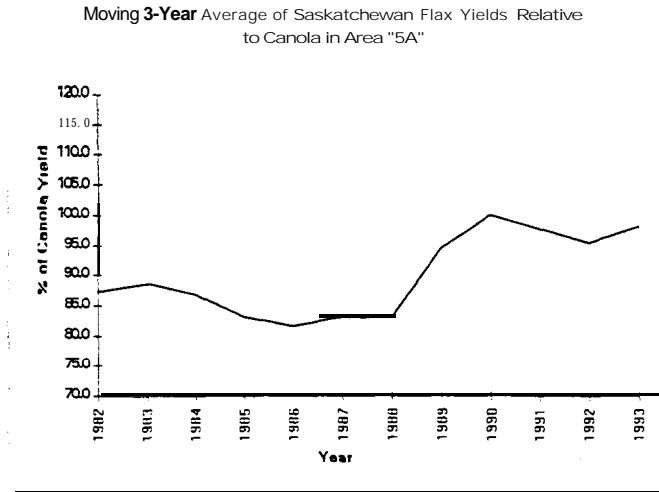


Figure 9

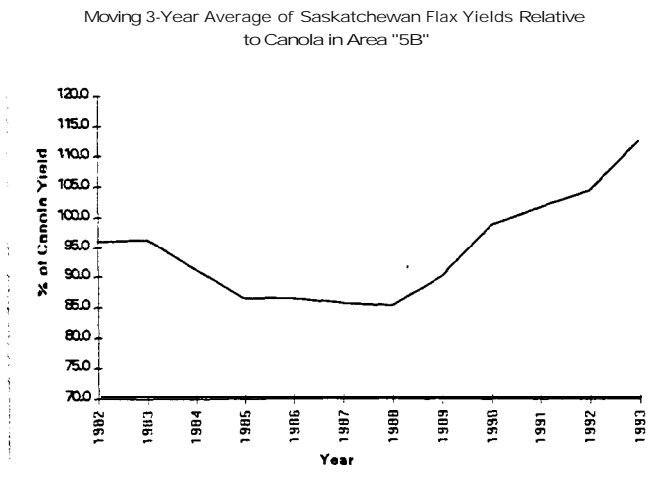


Figure 10.

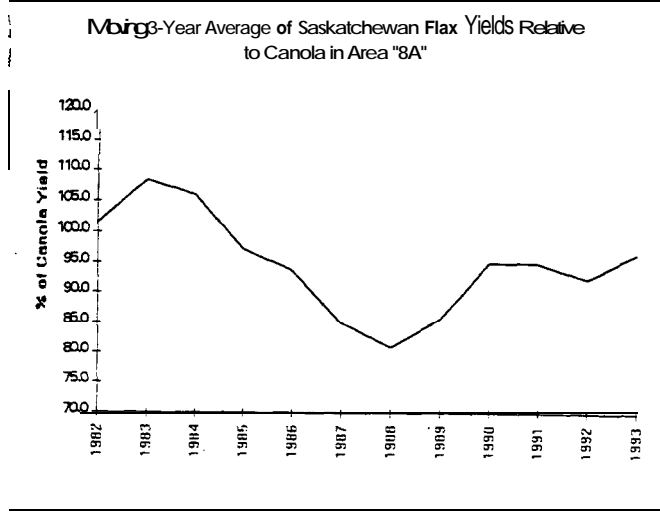
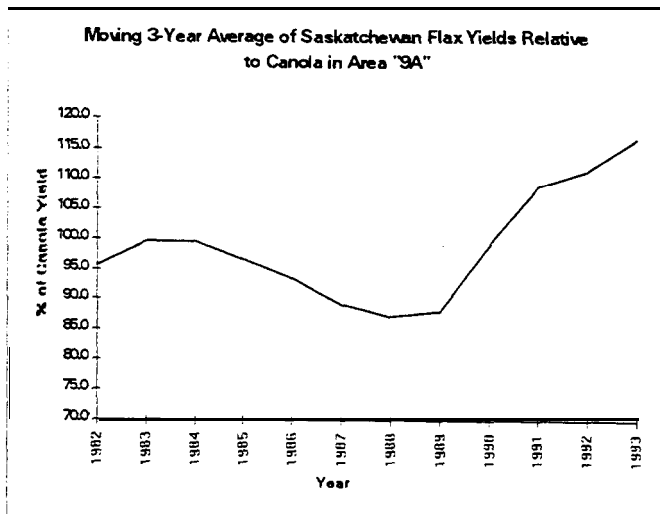
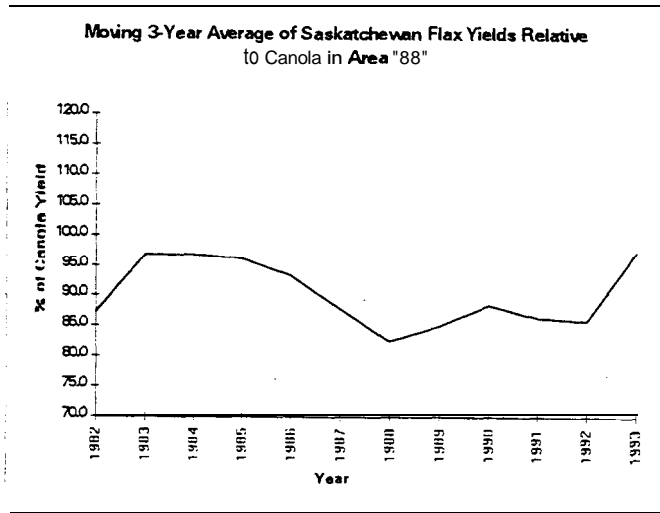


Figure 11.



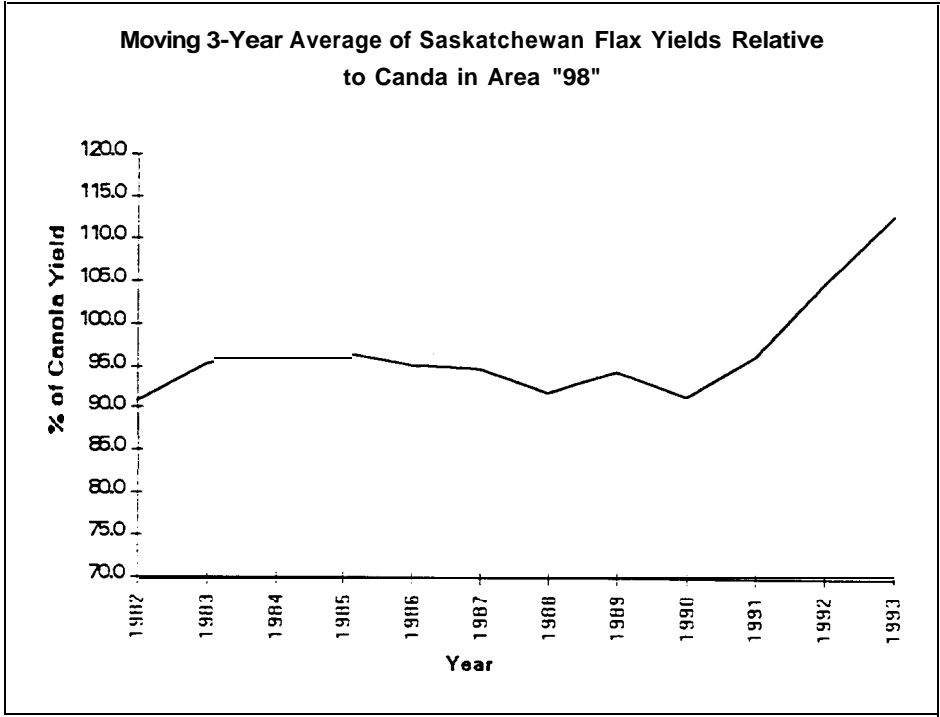


Figure 14

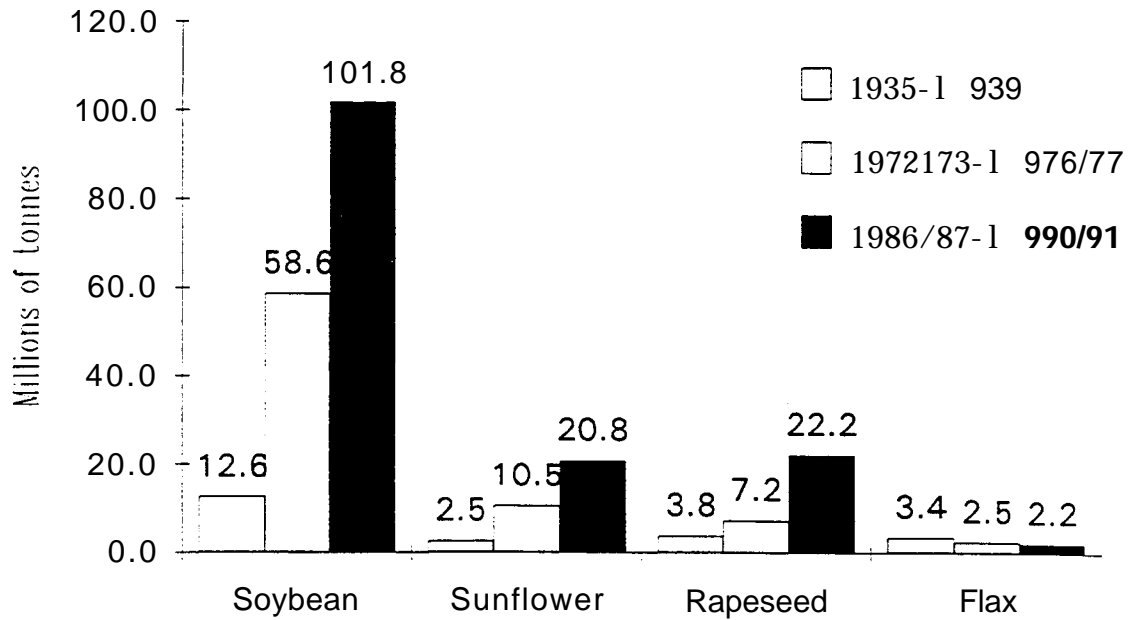


Figure 15. The world average annual production of soybean, sunflower, rapeseed and flax for three five year intervals.

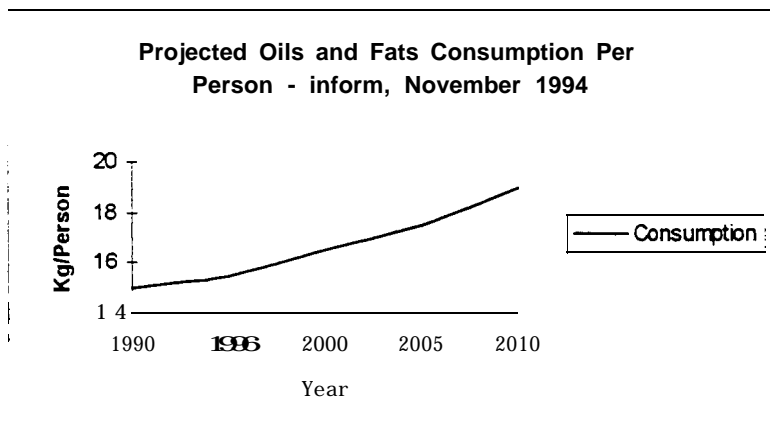


Figure 16.

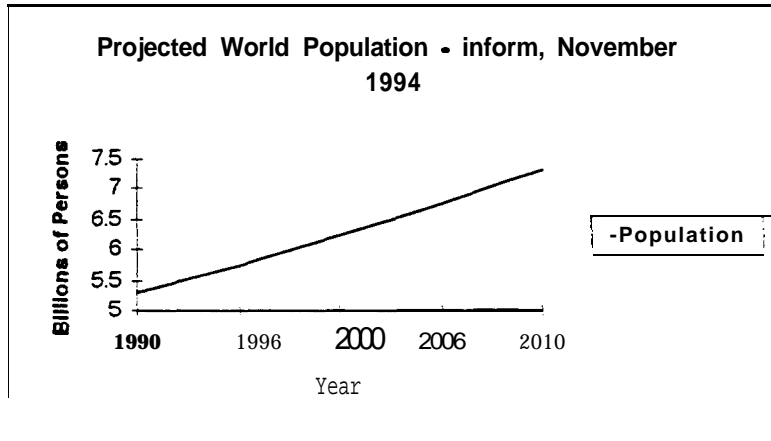


Figure 17.

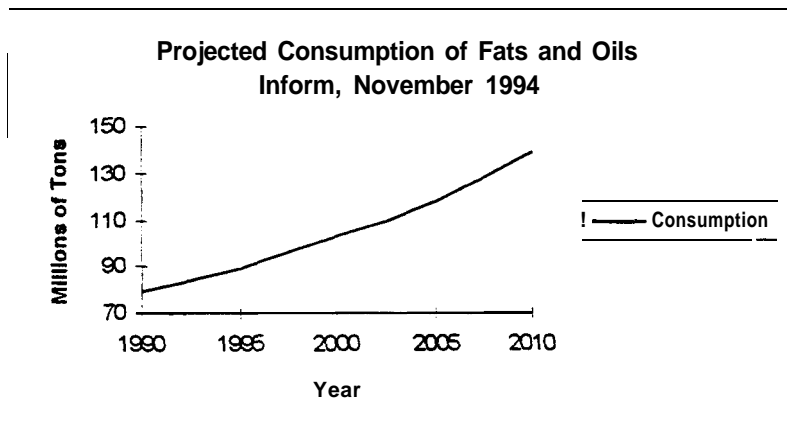


Figure 18.