2 Rye flour, wholemeal breads and rye breads

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2.1 World rye production

In comparison with other cereals, rye is produced in smaller quantities, and can be grown in regions with a cooler climate and on soils of lower fertility. In the past, the traditional regions of rye production were central and eastern Europe. In 1990 total world production of rye reached 37 million tonnes. It has increased continuously in the last decade. This trend is quite different from the 1960s when world production dropped from 35 to 31 million tonnes (Bushuk, 1976). During the last 10 years production has increased to 150% of that in 1980 (see Figure 2.1). Figure 2.1 shows that the increase was reached mainly by increasing yields of harvested grain from 1.6 t/ha in 1980 to 2.2 t/ha in 1990. The area harvested also increased, but not so significantly as other characteristics of world rye production.

Rye is not produced all over the world and there were considerable disproportions between the producing regions in 1990 (Figure 2.2). Three continents, Europe

![Figure 2.1](image-url)  
**Figure 2.1** Comparison of world rye production per year, total production areas, and average yield in 1980s (average of decade) and in years 1988, 1989 and 1990.
Figure 2.2  Comparison of rye production (millions of tonnes per year) in 1990 (in the order of decreasing quantity) in regions: former USSR, Europe (without USSR), Asia, North and Central America.

(without the USSR), Asia, and North and Central America are compared to the USSR in this figure. More than half of the world production came from the USSR and over 36% from Europe. However, it can be supposed that a main part of the former USSR rye production came from its European republics. Consequently, the rest of the world produces less than 10% of the total world production. If we compare the changes in the regions during the last 10 years, we can see that the greatest increase has also been due to the augmented rye crop in the USSR (Figure 2.3).

A comparison of nine countries with the greatest rye production is shown in Figure 2.4. All countries with production higher than 0.25 million tonnes per year were included in this figure.

Figure 2.3  Comparison of changes in rye production per year in 1980s (average of decade) and in years: 1988, 1989, 1990 in North and Central America, Europe (without USSR), former USSR and total world.