

**SOYBEAN BREEDING AND SEED PRODUCTION STATUS IN CROATIA
(1992 - 1994)***

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The cultivation of soybean in Croatia is done in dry-farming conditions on more than 20,000 hectares with the production of about 50,000 tones. However, current requirement for soybean grain in Croatia is about 100,000 tones, so that about 50% of soybean is imported. Soybean breeding programs are located in Zagreb and Osijek and domestic cultivars are the basis of seed production programs. Although there is sufficient seed production capacity there is some concern over seed quality due to the lack of seed processing and storage facilities.

Key words: soybean, breeding, seed production, gene bank

INTRODUCTION

In the period between 1990 and 1994 the areas growing soya generally fluctuated between 20,258 ha (1994) to 27,260 ha (1990) and averaging at 23,636 ha (Table 1). The aggression of Serbia and Montenegro (the so-called Yugoslavia) on the Republic of Croatia in 1991 and the occupation of 25 per cent of its territory has reduced the soybean growing area to 21,424 ha in 1991 and 20,258 ha in 1994. The average production was 51,447 t, reaching a high of 56,365 t in 1994. The average production was 51,447 t, reaching a high of 56,365 t in 1991 and a low of 46,129 t in 1992. The average yield was 2.18 tones per hectare, with the lowest value of 1.76 t/ha in 1992 and the highest value at 2.47 t/ha in 1991. The quoted values refer to dry farming, i.e. without irrigation. The current demand for soybean grain is about 100,000 tones per year.

Table 1. Soybean production in Croatia

Year	Production area (hectares)	Production (tones)	Yield (tones / hectare)
1990	27,260	55,461	2.03
1991	22,840	56,356	2.47
1992	26,220	46,129	1.76
1993	21,424	49,456	2.31
1994	20,435	49,835	2.46
Average	23,635	51,447	2.18

*Rad je izložen na sastanku FAO European Cooperative Network on Soybean u Padovi, 1994. godine

SOYBEAN BREEDING

There are 34 domestic, and 16 introduced soybean cultivars recognized by the National Commission for Varietal Approval.

The soybean breeding programs are located at the Department for Plant Breeding, Genetics and Biometrics, Faculty of Agriculture, University of Zagreb, and at the Agricultural Institute in Osijek.

Between 1992 and 1994 the following cultivars of the Institute for Plant Breeding, Genetics and Biometrics have been recognized:

- | | | |
|------------|-----------|---------|
| - HRVATICA | group 0 | (1993) |
| - BUGA | group 0-1 | (1993). |

In spite of the difficult working conditions due to the heavy destructions in Osijek caused by the Serbian aggression, Marija Vratarić, Ph.D. and her team continued the work on soybean breeding. As the result, the following cultivars of the Agricultural Institute in Osijek were recognized:

- | | |
|---------|---------|
| - BARA | (1993), |
| - DRAVA | (1993), |
| - IVA | (1993), |
| - KAJA | (1993), |
| - NADA | (1994). |

Breeding programs in Zagreb and Osijek have an aim to create early (00-0) and medium-early (I) soybean cultivars resistant to lodging, main diseases and pests, with increased grain protein content.

SOYBEAN SEED PRODUCTION

The soybean seed production is adjusted to the agro-ecological conditions, so that the cultivars of the 0-I maturity groups are sown in the east and the cultivars of 00-0 maturity groups are sown in west of the country. The average seed production in Croatia in past five years was 2,189.000 kg. As one can see on the Graph. 1. the soybean seed production in Croatia increases steadily and meets the needs. Domestic cultivars are mainly used in seed production.

Although there is sufficient seed production capacity there is some concern over seed quality. The main problem in soybean seed production is a lack of specialized seed processing facilities for soybean seed, as it is in case of other grain legumes. Storage facilities do not completely satisfy neither, and require modernisation. There is an urgent need for establishment of soybean seed processing plant in Županja region, as it was planned a few years ago but due to the danger of war operations, the construction has not started yet.

SOYBEAN GERMPLASM COLLECTION

Soybean collection is maintained within the framework of the project "Croatian Bank of Plant Genes" (No. 4-01-056) financed by the Ministry of Science and Technology and the Ministry of Agriculture and Forestry. The Project was initiated in 1991 with the aim of

national co-ordination of activities concerning conservation and utilization of national plant genetic resources. The project cooperates with all breeding institutes and there is an agreement concerning maintenance of the entire material at the Faculty of Agriculture in Zagreb. In case of soybean there is a close cooperation with the Faculty of Agriculture in Zagreb, Agricultural Institute in Osijek, Croatian Agricultural Center in Zagreb and a number of small private soybean breeders and seed producers.

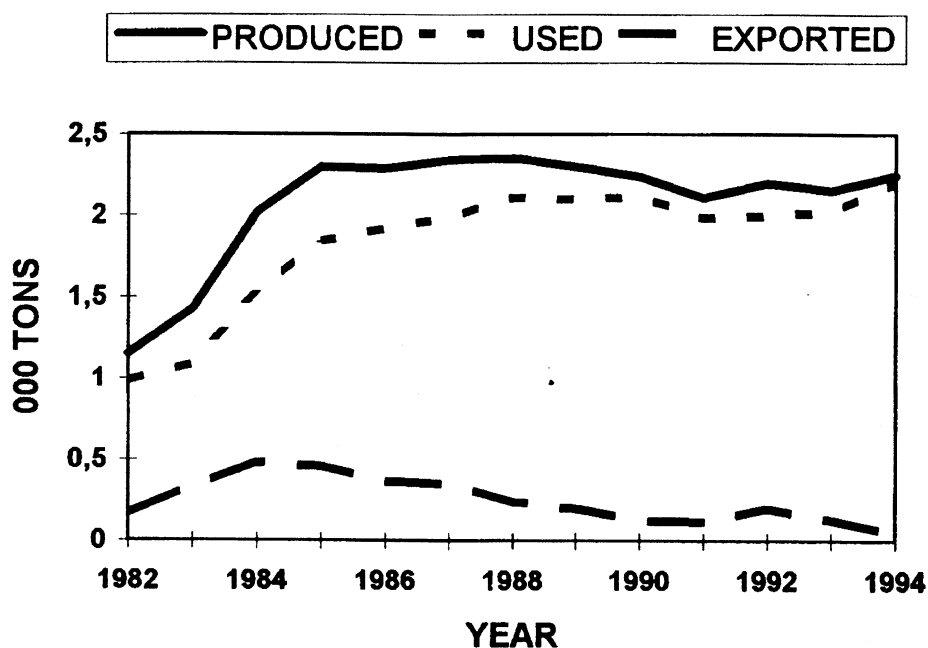


Table 1. Soybean seed production and use

The large portion of soybean plant material held at the Agricultural Institute in Osijek, as well as in case of other crops, was destroyed during the aggression on Croatia (approximately 90 per cent).

Soybean collection held at the Department for Plant Breeding, Genetics and Biometrics, Faculty of Agriculture in Zagreb consists of 4,502 accessions (local populations, modern cultivars and breeding material) (Table 2.)

Table 2. Soybean germplasm collection

Maturity group	No. of accessions
00-0	76
0	254
I	2.146
II	1.426
TOTAL	4.502

The storage conditions do not comply with internationally recommended standards. The establishment of a long-term storage (- 20 °C) facility for the maintenance of the base collection is planned at the Faculty of Agriculture in Zagreb. The active collections (+4 °C) will be held in a range of cooperating institutions situated in different agroecological regions of Croatia. Therefore, Croatian Bank of Plant Genes requires international assistance to develop an adequate storage facilities.

CONCLUSIONS

1. The production of soybean grain in Croatia provides for only about 50 per cent of needs, and the remaining 50 per cent is still imported.
2. Croatian breeders have been crated a substantial number of high-yielding cultivars well-adopted to the local conditions. The average yields generally satisfy considering the dry farming conditions.
3. The main problem in soybean seed production is the quality of the soybean seed. There is a lack of specialized facilities for seed processing and storage.
4. Soybean germplasm collection consists of 4,502 accessions. That is the basis of continuous work in plant breeding.

OPLEMENJIVANJE I PROIZVODNJA SJEMENA SOJE U HRVATSKOJ

SAŽETAK

Soja se u Hrvatskoj uzgaja u uvjetima bez navodnjavanja na više od 20,000 hektara s proizvodnjom od oko 50,000 tona. No, potrebe su Hrvatske oko 100,000 tona tako da se oko 50% uvozi. Oplemenjivački program na soji razvijeni su u Zagrebu i Osijeku, te su domaći kultivari osnova sjemenarstva. Iako se proizvodi dovoljno sjemenske soje, kakvoća sjemena nije uvijek zadovoljavajuća zbog nedostatka kapaciteta za doradu i uskladištenje.

Ključne riječi: soja, oplemenjivanje, sjemenarstvo, banka gena

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Primljeno - Received:

03.02.1995.