



Groundnut and other legumes for crop diversification in the Central Asia and Caucasus region

L'arachide et autres légumineuses pour diversifier les assolements en Asie Centrale et dans le Caucase

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The Central Asia and Caucasus (CAC) region consists of the five republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan in Central Asia and the three republics of Armenia, Azerbaijan, and Georgia in the Caucasus. The landscape of the region is a mixture of mountain, desert and steppe, and the soils are quite diverse. The environment is characterised by low and variable rainfall and extremes of temperature. Agriculture and animal husbandry are of paramount importance in the region as a whole. On average, these activities are the source of employment for one-third of the labour force and their percentage contribution to the gross domestic product has increased since the republics gained their independence.

The region can be classified into four broad agroecological zones: lowland rainfed, lowland irrigated, lowland semi-arid rangeland, and mountains. Agricultural crops are grown in the first two zones. In lowland rainfed areas inputs are low and problems are developing associated with maintaining soil fertility under predominant cereal-based systems in the absence of fertilisers. The emerging smallholder farmers need assistance with enterprise development and introduction of new crops and rotations. Considerable potential exists for developing mixed farming based on the integration of crop and livestock production. In lowland irrigated areas, salinisation and waterlogging are major problems. All countries of the region face problems of seed supply due to the collapse of large-scale seed production on the former state farms.

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Photo: S. N. Nigam, ICRISAT, India

Groundnut farmer in Uzbekistan.

With increasing concern for crop diversification, food legumes, forage legumes, and oilseeds are attracting the attention of policy makers and farmers. But most of these crops are still classified as minor crops in the region. Legume crops such as groundnut, chickpea, lentil, field peas, *Phaseolus* beans, black gram (*Vigna mungo*), green gram (*Vigna radiata*) and soyabean can play an important role in increasing food diversity and productivity and enhancing the sustainability of cereal-based cropping systems.

Groundnut in the region

Groundnut seeds contain 45–48% high quality edible oil and 23–25% easily digestible protein. They are also a rich source of minerals (Ca, Mg, P, K and Fe) and vitamins (E, K and the B group). The crop is grown mainly for direct consumption (as boiled, roasted and fried nuts) and confectionery uses in the food industry (see photo). The groundnut haulms provide excellent fodder for livestock. Groundnut cake obtained after oil extraction is also used in the preparation of snacks for

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human consumption. Groundnut shells are used for animal feed or fuel. Most of the groundnut production is consumed locally. Any surplus production is traded within the region or with nearby countries. Armenia, Azerbaijan, Georgia and Turkmenistan generally import groundnuts to meet their domestic demand. Most of the countries in the region import cooking oil. Increased production of groundnut and other oilseed crops such as safflower, sunflower and mustard in CAC countries can help to reduce this dependence on imported cooking oil leading to savings in foreign exchange.

No reliable production statistics are available for legumes in the CAC region. The figures quoted are guestimates by the local authorities and could be under stated. Among the Central Asia republics, all the countries except Kazakhstan grow groundnut. Whereas the current groundnut area in Kyrgyzstan and Tajikistan is negligible (<500 ha), it is 1,500–2,000 ha in Turkmenistan and 5,000–7,000 ha in Uzbekistan. Except for Azerbaijan (about 1000 ha) in the Caucasus region, the groundnut cultivation in Armenia and Georgia is negligible. However, in each country there are existing and potential areas where groundnut cultivation can be intensified and promoted to meet the increasing local demand for its produce and for export. Among the Central Asia republics, these include the southern region of the Fergana Valley in Kyrgyzstan, the Kari Boden area of Leninabad, Khatloon, and the central territories in Tajikistan, almost all the regions of Turkmenistan, and also Tashkent, Surhandarya, Sirdarya, Jijjak, Samarkand, Kashkadarya, and the Bukhara regions of Uzbekistan. In the Caucasus groundnut cultivation can be promoted in the Ararat Valley and the Megrinskiy region of Armenia, the eastern and western parts of Georgia, and the Shaki-Zakatala, Ganja-Gazakh, Mil-Mugan, Lenkerzen and Agtaza zones of Azerbaijan. Agroclimatic conditions and soils are suitable in these areas for groundnut cultivation and yields of 2.0–4.0 t/ha can be obtained.

However, the scope for expanding and intensifying groundnut cultivation varies in each country. The maximum potential exists in Uzbekistan followed by Turkmenistan and Azerbaijan.

Some previous research

Uzbekistan has the oldest history of groundnut research in the region. In the early 1900s, new groundnut genotypes were

introduced and they were grown successfully in the irrigated areas of Central Asia. However, the crop never became important, remaining a 'back-yard' crop in rural areas. The Uzbek Research Institute of Plant Industry, Kibrai, Tashkent maintains a groundnut germplasm collection of 1407 accessions in its recently renovated gene bank. Some of the groundnut varieties released in the past include Tashkentskiy 112, Tashkentskiy 32, Perzivan 46/2, and Kibrai 4. Detailed crop management practices were also worked out. In Kyrgyzstan, where the crop was introduced probably from China via the silk trade route, no systematic research was undertaken. Kyrgyz local and Yulduz varieties are grown in the country. In spite of the small groundnut area in Tajikistan, management practices for cultivation were developed. Tajikistan 10 and Tajikistan 15 are new promising varieties grown there. In Turkmenistan, an agronomy package was developed for groundnut and varieties obtained from the Commonwealth of Independent States, Turkey, and the USA were evaluated.

Although the crop was introduced in the 1960s in Armenia, no research and development work on it was undertaken there. The research initiated in the 1950s in Azerbaijan led to the identification of Perzivan 46/2 and Zakatala 294/1 cultivars in Azerbaijan. These cultivars were also made available to other countries in Central Asia. However, these research initiatives were not sustained for a longer period. In spite of groundnut being introduced at the end of the eighteenth century in Georgia, it is only now that the country is taking some interest in groundnut research and development.

Some recent achievements

In 1998 the World Bank and the Consultative Group on International Agricultural Research (CGIAR) launched a programme to assist CAC countries to rehabilitate their agriculture and research and development infrastructure. Under the project 'Germplasm enhancement for diversification and intensification of agricultural production', ICRISAT's focus is on the groundnut crop in the region. Following a workshop in Tashkent organised in November 1999 to appraise the groundnut situation and identify the potential areas of intervention in the region, recommendations included research and action on: germplasm collection, evaluation, characterisation and conservation, genetic enhancement, agronomic practices, plant protection, seed production, socio-economic and policy issues, information

exchange and human resource development (1). Since then, ICRISAT has undertaken appraisal and assessment visits in the region, introduced improved breeding materials, and has trained personnel from the region in groundnut research and development, including seed production methodologies. From the introduced materials in Uzbekistan, a short-duration variety ICGV 86155 named Salomat and a medium-duration variety ICGV 94088 named Mumtoz are now in the final stages of release under the State Strain Testing Programme.

Although the governments in the region are eager to diversify their agriculture and introduce legumes in the system, the financial support for research and development of such crops is negligible. Currently efforts supported by external agencies are restricted to exploratory and adaptation trials. Unless a long-term programme with committed financial support is established, the progress in legume research and development is likely to remain limited. ■

(1) Saxena, N. P. and Nigam, S. N. (Eds) (2001). Groundnut production in Central Asia and Caucasus countries: Outlook for the future. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India. (English and Russian versions)