

**Abstract**

Kazakhstan is a country rich in primary and secondary gene pools of many cultivated and wild plants, but there have been complete changes of many ecosystems, as a result of the large-scale scarification of the land (1954-1960). During the last few years, a number of species are no longer found within the territory of Kazakhstan. The Convention of Biodiversity (CBD) was signed by Kazakhstan, along with 152 countries in (1992). In order for the ratification of the CBD, three national scientific programs have been accepted for the conservation and sustainable use of PGRFA. In this paper a brief description of the state of *in-situ* management in the Republic of Kazakhstan is presented.

**Key words:** plant genetic resources, in situ management, on farm conservation

The special protected areas of Kazakhstan ("The Program of RK about of SPA system development on 2007 – 2009")

| Categories of protected areas       | Objects of SPA Reservations | The area (km <sup>2</sup> ) |
|-------------------------------------|-----------------------------|-----------------------------|
| Reservations                        | 10                          | 12035,7                     |
| National parks                      | 9 (1*)                      | 16531,3                     |
| Protection regimes                  | 55                          | 56213,1                     |
| Natural sanctuaries                 | 26                          | 64,8                        |
| Botanical gardens                   | 7                           | 4,2                         |
| Areas of outstanding natural beauty | 5*                          | 113505,0                    |
| Wildlife reserves                   | 2                           | 9401,3                      |
| Total                               | 109 (6*)                    | 207755,4                    |

The utilization the species of Kazakhstan flora is extremely various. According to Karmysheva, etc. (1979), useful qualities possess more than 1500 species. Over 500 species concerns to medicinal plants (Vintergoller, 1979); 350 species - to technical plants (Pavlov, 1947). More than 500 species of Republic are fodder, nearby 300 - technical, more than 250 - medicinal, 150 species - food and volatile oil plants (Baytulin, 1986, etc. al). According to Grudzinskaya (2006), the most numerous of medicinal (1300 species), fodder (1028), decorative (649), technical (534), honey (532), and volatile oil (500) plants. It is necessary to consider, that the majority of species simultaneously are poisonous and medicinal, or food, honey plants, technical, etc., therefore the number of species in the resulted groups of useful plants does not reflect total of species of Kazakhstan flora.

The basic groups of useful plants (quantity of species).

| The basic groups of useful plants | Quantity of species | Are brought in «the Red book Kazakh SSR» |
|-----------------------------------|---------------------|--|
| Medicinal                         | 1300                | 24                                       |
| Fodder                            | 1028                | 7  |
| Decorative                        | 649                 | 87                                       |
| Technical                         | 534                 | 10                                       |
| Honey plants                      | 532                 | -  |
| Weedy                             | 501                 | -  |
| Volatile oil plants               | 500                 | -  |
| Food                              | 443                 | 17                                       |
| Poisonous                         | 307                 | 2  |
| Ecologically significant          | 172                 | 1  |
| Wild relatives                    | 275                 | -  |
| Insecticidal                      | 119                 | -  |

Most of all medicinal species belongs to families:

Asteraceae Dumort. (136), Lamiaceae Lindl. (83), Ranunculaceae Juss. (80), Fabaceae Lindl. (79), Rosaceae Juss. (76), Apiaceae J. Agardh (58), Brassicaceae Burnett (57), Scrophulariaceae Juss. (47), Polygonaceae Juss. (43), Chenopodiaceae Vent. (40).

Decorative species to families: Asteraceae (61), Fabaceae (51), Rosaceae (43), Ranunculaceae (38), Salicaceae Virb. (37), Poaceae Barnhart (24), Scrophulariaceae (17), Lamiaceae (16).

Fodder plants most of all meets as representatives of families:

Fabaceae (189), Poaceae (154), Asteraceae (111), Chenopodiaceae (72), Rosaceae (42), Brassicaceae (38), Polygonaceae (38), Ranunculaceae (34), Cyperaceae Juss. (33), Lamiaceae (29), Caryophyllaceae Juss. (20).

Food plants - in families: Rosaceae (53), Asteraceae (34), Fabaceae (33), Polygonaceae (33), Apiaceae (30), Brassicaceae (28), Chenopodiaceae (27).

Not less than of 500 species of volatile oil plants are represented in flora of Kazakhstan that makes 8,3%. The richest families of a volatile oil plants: Apiaceae (79), Lamiaceae (59), Asteraceae (71), Rosaceae (21), Ranunculaceae (7), Brassicaceae (5), Cupressaceae Rich.ex Bartl. (4).

The high content of essential oils is revealed at 45 species: Juniperus semiglobosa Regel, J.serawschanica Kom., J.turkestanica Kom., J.sabina L.

(Cupressaceae), Abies sibirica Ledeb., Picea schrenkiana Fisch. (Pinaceae Horan), Mentha longifolia (L.) Huds., Dracocephalum nodulosum Rupr., Ziziphora clinopodioides Lam., Z.bungeana Juz., Thymus marschallianus Willd. (Lamiaceae), including the species of families: Apiaceae, Asteraceae (Egeubaeva, 2002).

The species of plants with insecticidal activity is more often in families: Asteraceae, Scrophulariaceae, Chenopodiaceae, Fabaceae, Ranunculaceae, Apiaceae, Lamiaceae, Rosaceae, Solanaceae Juss., etc. The genera richest by such species: Achillea L., Artemisia L., Pyrethrum Linn., Tanacetum L., Delphinium L., Glycyrrhiza L., Dodartia L., Linaria Hill., Lepidium L., Verbascum L., Vexibia Rafin.и etc. (Gemedjeva, Sitpaeva, Vasilyev, 2002).

The assessment of Kazakhstan genetic resources has allowed revealing the level of study of useful plants. First of all, the food, medicinal and decorative species are estimated and studied. 66% of species (3797 species from the general number, Gemedjeva, 2004) are characterized. The chemical compound is investigated for 1753 species (31%) and useful properties for 1495 species (26%) from 5728 species («The Illustrated determinant of Kazakhstan plants», 1969, 1972; «The Red Book Kazakh SSR», 1981; the 9-languid edition «Vegetative resources . . . », 1984-1996; «Wild-growing useful plants of Russia», 2002). It is created the bank of experimental data on research of a chemical compound more than 300 species of plants, most perspective of which have been recommended for introduction in the state pharmacopoeia of Kazakhstan and in applied medicine (Musyckina, 2004).

Over 300 wild-growing species of higher plants from 64 families were objects of resource researches. The tannic, technical, medicinal, foods, volatile oil-producing plants were studied. For 57 species of medicinal plants (Artemisia L., Aconitum L., Delphinium L., Glycyrrhiza L., Lagochilus Bunge, Polygonum L., Rosa L., Ephedra L., Rumex L., etc.) the resource characteristics is given (Gemedjeva, 2000). The species of family Alliaceae are perspective for all-round studying - genera Allium L. (124 species) in which is characterized no more than 21% of species, also species of family Apiaceae (p. Ferula L., Seseli L., Schrenkia Fisch. et C.A.Mey., etc.), and family Asteraceae (p. Alfredia Cass., Aster L., Centaurea L., Chondrilla L., Cirsium Hill, Cousinia Cass., Crepis L., etc.) which require the further studying. The interest for study of a chemical compound and useful properties is represented the species from the families earlier not studied or having only short data (not less than 15): Ceratophyllaceae S.F.Gray, Elatinaceae Dumort., Globulariaceae DC., Plumbaginaceae Juss., etc., and also the species of families: Boraginaceae, Brassicaceae, Caryophyllaceae Juss., Chenopodiaceae, Cyperaceae, Fabaceae, Lamiaceae, Poaceae, Polygonaceae, Ranunculaceae, Rosaceae, Rubiaceae Juss. Scrophulariaceae, Zygophyllaceae R.Br.

Wild relatives of cultivated plants of Kazakhstan's flora

| Crops         | Number of |         | The main genera   |
|---------------|-----------|---------|---|
|               | genera    | species |   |
| Cereals       | 8         | 15      | Aegilops, Avena, Hordeum, Secale, Fagopyrum, Vicia  |
| Vegetables    | 18        | 36      | Lathyrus Rheum, Lactuca, Daucus, Sinapis, Allium  |
| Horticultural | 22        | 55      | Malus, Ribes, Rubus, Amygdalus, Cerasus, Fragaria, Juglans, Pistacia, Vitis               |
| Fodder        | 29        | 70      | Agropyron, Festuca, Elytrigia, Bromus, Poa, Medicago, Trifolium, Vicia, Melilotus, Kochia |
| Technical     | 8         | 15      | Cannabis, Allochrusa, Polygonum, Rumex, Linum, Carthamus, Hibiscus, Scorzonera            |
| Medicinal     | 9         | 13      | Rhaponticum, Humulus, Althaea, Salvia, Carum, Saponaria, Matricaria, Erysimum, Viburnum   |