

**Exploration and Collection of Vegetable, Forage and  
Other Crop Seeds in the Ukraine  
(August 3 - September 13, 1996)  
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Ukrainian agriculture is characterized by technologically well-equipped land management and the wide availability of high-yielding cultivars of various economically important crops adapted to specific soil and climate conditions. Intensification of crop production in several regions of the Ukraine has completely ousted local varieties and landraces of food and forage crops. Large-scale plowing of cultivated areas and overgrazing of limited natural pasture land have led to the elimination of local phytocoenoses, which in turn has caused considerable losses in the diversity of plants adapted to the local environments.

However, due to specific economic, political, geographical and other factors, there still are some areas in the Ukraine with sufficient natural and cultivated habitats where it is possible to collect or maintain unique plant genetic materials for food, forage and other purposes. One such virgin corner is the Ukrainian Carpathian Mountains and surrounding area. The factors enumerated below have influenced the genetic diversity of wild and cultivated plants in this region.

1. Geographic: The complex mountainous relief has led to the development of ecological niches with diverse habitats – from moderate environments (distribution of wild and cultivated thermophilic and light-demanding species) to extreme ones (distribution of wild and cultivated species with marginal parameters of cold-, frost- and winter-hardiness and tolerance of excessively wet and acid soils).
2. Soil: The explored areas are characterized by an extraordinary diversity of soil types in the horizontal zonality and their variegation (mosaic structure) in the vertical (upland) zonality. Soils range from the richest ones in river valleys and lowlands to the poorest in marginal mountainous areas.
3. Anthropogenic (technogenous): Plowed lands in the mountains are characterized by complex configuration and small area (mostly 0.5-5.0 hectares, maximum 15-20 hectares), which makes it impossible to use large farm machinery. Until recently, horses were used on smaller fields. Certain agricultural methods, crops and specific plant varieties, adapted to each given soil and climate environment, are applied on each level of zonality and soil type.
4. Political: The Western Ukraine was not annexed to the former USSR until 1940. The agricultural "collectivization policy" began here in 1947 and was implemented in the mountainous areas no sooner than 1955-1956. This has allowed the local inhabitants to preserve traditional seeds and planting materials. These have been mainly local varieties and forms of different agricultural crops of economic importance. In most of the upland areas, where, due to a number of subjective and objective reasons, intensive plant production had never developed, diverse seed and planting materials were for the most part used by the local population until the present.

However, in recent times, due to changes in the political situation in the Ukraine, collective farms (kolkhozes) have been disbanded and arable lands have been divided into smaller plots or returned to the former landowners (in the former Western Ukraine). The complicated political situation, lack of any governmental support to small agricultural producers, and saturation of the

local market with competitive imported food products, have led to an abrupt decrease in the volume and variety of local plant production. Unemployment has resulted in emigration. There is now a real threat of losing a considerable portion of the genetic material, especially of the unique species and intraspecies crop genetic diversity.

Purpose: Exploration of the territory and collecting seed samples of rare and disappearing wild species of vegetable, forage and other crops, as well as landraces and breeding varieties for home and commercial food growing and forage purposes.

Itinerary: St. Petersburg, Vitebsk, Mogilev, Chernigov, Kiev, Uman, Vinnitsa, Khmel'nitsky, Ternopol, Rovno, Lvov, Uzhgorod, Mucachevo, Rakhov, Ivano-Frankovsk, Chernovtsy, Kamenets-Podolsky, Mogilev-Podolsky, Bar, Vinnitsa, Zhitomir, Gomel, Orsha, St. Petersburg.

Explorers: Dr. N. I. Dzyubenko, Head of Dept. of Forage Crops, VIR, Russia; and Dr. V. D. Bugaev, Head of Dept. of Plant Breeding, Institute of Forage Crops of the Ukrainian Academy of Sciences, Ukraine.

Distance covered: 10,760 km.

### Results of the Mission

In the Ukraine, the majority of both rural and urban dwellers own plots of land (0.1 to 1.0 hectares) where they grow various food crops (potatoes, fruits, berries, vegetables, etc.). However, whereas town dwellers mostly plant modern breeding cultivars, rural dwellers, especially those who live far from town, prefer local seed and planting materials (landraces), which may be less productive than modern high-input cultivars but remain unrivaled in other characteristics: flavor, adaptability, disease and pest tolerance, etc. These are for the most part local populations which have been selected and improved over several decades or even centuries. As a rule, each rural settlement has its own original seed and planting materials; in most cases even within a single settlement different forms and/or varieties of the same crop have been cultivated in different plots. Such differentiation of local crop populations (especially those grown for food purposes) has assured considerable genetic diversity.

#### List of Crops and Number of Samples Collected in the Ukraine (August 3 - September 13, 1996)

Crop	Number of Samples	Crop	Number of Samples
Phaseolus	129	Clover	22
Tomato	21	Fescue	16
Caraway	18	Ryegrass	15
Pumpkin	17	Cock's foot	12
Watermelon	8	Brome grass	11
Pepper	8	Canary grass	8
Melon	5	Timothy grass	7
Horse beans	3	Poa	5
Pea	3	Bentgrass	6
Eggplant	2	Milk vetch	2

White radish	1
Carrot	1
Bush pattypan	1
Marrow Squash	2
Garden radish	1
Poppy	1

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<b>Subtotal:</b>	<b>221</b>	<b>Subtotal:</b>	<b>104</b>
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### **TOTAL FOR ALL CROPS: 325 samples**

Wild seed samples of forage and other crops were collected mainly in mountainous areas and in river and lake valleys, where local phytocoenoses still remained intact.

Germplasm with basic species and intraspecies diversity was collected in the area of the Ukrainian Carpathians and adjacent territories. Of all the germplasm collected, phaseolus, tomato, clover and some other crops are represented by the richest diversity (see table below). The team collected a significant part of the species and intraspecies diversity of local crop varieties (landraces) traditionally used by local people for food.

### **Conclusion and Suggestions**

All areas planned for exploration have been explored. However, continuous pouring rain severely hindered seed collecting efforts, while some of the collection sites (river valley lowlands and hillsides) were nearly inaccessible. For the same reason, during the explorations much time was spent drying the collected damp seeds. Nevertheless, the team succeeded in collecting 325 samples of 26 crops.

Among the areas attractive for collecting landraces of vegetable, forage and other crops in the Ukraine are some areas of ancient irrigated farming in the Dnieper and Yuzhnyi Bug river basins, and the Crimean Peninsula. Also of interest are certain areas of the Republic of Moldova.

In order to preserve the diversity of cultivated and wild plants, we propose the following collecting missions in the nearest future:

1. Dnieper and Yuzhnyi Bug basins, with the following itinerary: Gomel — Chernigov — Kiev — Cherkassy — Dnepropetrovsk — Zaporozhye — Kherson — Odessa — Nikolayev — Voznesensk — Yuzhnoukrainsk — Pervomaisk — Gaivoron — Vinnitsa — Khmelnik, to collect the seed of local landraces (populations) of vegetables, melons, meadow grasses and other crops.

2. Crimean peninsula, with the following itinerary: Genichevsk — Dzhankoy — Feodossia — Sudak — Simferopol — Alushta — Yalta — Sevastopol — Saki — Yevpatoria — Chernomorskoye — Razdolnoye — Krasnoperekopsk, to collect local landraces and wild populations characterized by tolerance to high heat, wind and salinity.

3. Republic of Moldova, with the following itinerary: Mogilev-Podolsky — Yedinets — Felesht — Ungen — Komrat — Chadry-Lunga — Tiraspol — Kishinev — Rybnitsa — Floresht — Drobia — Mogilev-Podolsky.

**Table 2. Name, geographical location and seed source**

Cultivar Name	Geographical Location	Seed's Source
<u>Haricot bean (<i>Phaseolus vulgaris</i> L.)</u>		
1. Landrace	v. Verkhniye Vorota, Volovets district	Private truck garden
Transcarpathian region, h = 480 m		
2. Landrace	v. Skalat, Volochisk district, Ternopol' region	Private truck garden
3. Landrace	s. Letichev, Khmel'nitsky region	Private truck garden
4. Landrace	s. Tysmenitsa, Ivano-Frankovsk region	Private truck garden
5. Landrace	c. Khodyrev, L'vov region	Local market
6. Landrace	v. Verkhnie Vorota, Volovets district, Transcarpathian region, h = 590 m	Private truck garden
7. Landrace	v. Koroliyevo, Khust district, Transcarpathian region	Private truck garden
8. Landrace	s. Rudno, L'vov region	Local market
9. Landrace	v. Verkhniye Vorota, Volovets district, Transcarpathian region, h = 670 m	Private truck garden
10. Landrace	c. Zborov, Ternopol' region	Local market
11. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
12. Landrace	s. Berezhany, Ternopol' region	Private truck garden
13. Landrace	c. Kolomid, Ivano-Frankovsk region	Local market
14. Landrace	v. Belaya Tserkov, Rakhov district, Transcarpathian region	Private truck garden
15. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
16. Landrace	v. Lishnya, Drogobych district, L'vov region	Private truck garden
17. Landrace	v. Lishnya, Drogobych district, L'vov region	Private truck garden
18. Landrace	v. Lishnya, Drogobych district, L'vov region	Private truck garden
19. Landrace	v. Nizhniye Vorota, Volovets district, Transcarpathian region	Private truck garden
20. Landrace	v. Verkhniye Vorota, Volovets district, Transcarpathian region, h = 710 m	Private truck garden
21. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
22. Landrace	v. Verkhniye Vorota, Volovets district, Transcarpathian region, h = 460 m	Private truck garden
23. Landrace	v. Nizhniye Vorota, Volovets district, Transcarpathian region, h = 660 m	Private truck garden
24. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
25. Landrace	v. Zhmerinca, Bar district, Vinnitza region	Private truck garden
26. Landrace	s. Lozovoe, Khmel'nitzki region	Private truck garden
27. Landrace	c. Yaremcha, Ivano-Frankovsk region	Local market
28. Landrace	c. Nemirov, Vinnitza region	Local market
29. Landrace	v. Lishnya, Drogobych district, L'vov region	Private truck garden
30. Landrace	s. Kozin, Rovno region	Private truck garden
31. Landrace	v. Monastyr'sko, Ternopol' region	Private truck garden
32. Landrace	v. Zavadovka, Teplik district, Vinnitza region	Private truck garden
33. Landrace	v. Yasnoe, Volochisk district, Chmel'nitzki region	Private truck garden
34. Landrace	v. Velikoe Kopane, Vinogradov district, Transcarpathian region	Private truck garden

35. Landrace	v. Lugi, Rakhov district, Transcarpathian region	Private truck garden
36. Landrace	v. Lugi, Rakhov district, Transcarpathian region	Private truck garden
37. Landrace	v. Voiytovka, Bershad' district, Vinnitza region	Private truck garden
38. Landrace	c. Morshin, L'vov region	Local market
39. Landrace	c. Krasilov, Khmel'nitzki region	Local market
40. Landrace	c. Ostrog, Rovno region	Local market
41. Landrace	v. Yur'evka, Uman' district, Cherkassy region	Private truck garden
42. Landrace	s. Vashkovtzy, Chernovtzy region	Private truck garden
43. Landrace	v. Krasnosielka, Bershad' district, Vinnitza region	Private truck garden
44. Landrace	v. Myagkohod, Bershad' district, Vinnitza region	Private truck garden
45. Landrace	c. Mukachievo, Transcarpathian region	Private truck garden
46. Landrace	c. Mukachievo, Transcarpathian region	Private truck garden
47. Landrace	v. Lugi, Rakhov district, Transcarpathian region	Private truck garden
48. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
49. Landrace	s. Mizoch, Rovno region	Private truck garden
51. Landrace	s. Chabany, Kiev district, Kiev region	Private truck garden
52. Landrace	v. Dunaevtzy, Khmel'nitzki region	Private truck garden
53. Landrace	s. Yablonov, Ivano-Frankovsk region	Private truck garden
54. Landrace	s. Burshtyn, Ternopol' region	Private truck garden
55. Landrace	c. Lityn, Khmel'nitzki region	Local market
56. Landrace	v. Kotzyubinskoe, Chernigov district, Chernigov region	Private truck garden
57. Landrace	c. Zdolbunov, Rovno region	Private truck garden
58. Landrace	v. Nizhnie Vorota, Volovetz district, Transcarpathian region	Private truck garden
59. Landrace	c. Rogatyn, Ternopol' region	Private truck garden
60. Landrace	c. Kosov, Ivano-Frankovsk region	Private truck garden
61. Landrace	s. Ulanov, Khmel'nik district, Vinnitza region	Private truck garden
62. Landrace	s. Stebnyk, L'vov region	Private truck garden
63. Landrace	c. Kalush, Ivano-Frankovsk region	Private truck garden
64. Landrace	v. Grebinki, Vasil'kov district, Kiev region	Private truck garden
65. Landrace	s. Gvardeyski, Khmel'nitzki region	Private truck garden
66. Landrace	v. Kosharintzy, Bershad' district, Vinnitza region	Private truck garden
67. Landrace	c. Gnivan', Vinnitza region	Local market
68. Landrace	c. Fastov, Kiev region	Local market
69. Landrace	s. Galich, Ivano-Frankovsk region	Local market
70. Landrace	v. Solotvino, Rakhov district, Transcarpathian region	Private truck garden
71. Landrace	v. Lilcha, Khust district, Transcarpathian region	Private truck garden
72. Landrace	s. Kozova, Ternopol' region	Private truck garden
73. Landrace	c. Razhnyatov, Ivano-Frankovsk region	Private truck garden
74. Landrace	s. Dolina, Ivano-Frankovsk region	Private truck garden
75. Landrace	s. Chotin, Chernovtzy region	Private truck garden
76. Landrace	s. Beregovoe, Transcarpathian region	Private truck garden
77. Landrace	c. Kamenetz-Podol'ski, Khmel'nitzki region	Local market
78. Landrace	v. Zhovchen', Galich district, Ivano-Frankovsk region	Private truck garden
79. Landrace	v. Monastyr'sko, Ternopol' region	Private truck garden
80. Landrace	v. Lugi, Rakhov district, Transcarpathian region	Private truck garden
81. Landrace	s. Kozova, Ternopol' region	Private truck garden

82. Landrace	v. Medzhibozh, Khmel'nitzki region	Private truck garden
83. Landrace	v. Sitkovtzy, Gaiysin district, Vinnitza region	Private truck garden
84. Landrace	v. Bogdan, Rakhov district, Transcarpathian region, h = 610 m	Private truck garden
85. Landrace	s. Beregovoe, Transcarpathian region	Private truck garden
86. Landrace	v. Vorohta, Rakhov district, Transcarpathian region	Private truck garden
87. Landrace	s. Beregovoe, Transcarpathian region	Private truck garden
88. Landrace	v. Gordeevka, Khmel'nik district, Vinnitza region	Private truck garden
89. Landrace	c. Mogilev-Podol'ski, Vinnitza region	Private truck garden
90. Landrace	s. Berezhany, Ternopol' region	Private truck garden
91. Landrace	v. Volovetz, Transcarpathian region, h = 480 m	Private truck garden
92. Landrace	v. Kamenetz-Podol'ski, Khmel'nitzki region	Private truck garden
93. Landrace	s. Beregovoe, Transcarpathian region	Private truck garden
94. Landrace	s. Podvolochisk, Ternopol' region	Private truck garden
95. Landrace	v. Paseka, Svalyava district, Transcarpathian region	Private truck garden
96. Landrace	v. Michaiylovka, Chmel'nitzki district, Chmel'nitzki region	Private truck garden
97. Landrace	v. Kirnasovka, Tul'chin district, Vinnitza region	Private truck garden
98. Landrace	v. Shlyakhovoe, Bershad' district, Vinnitza region	Private truck garden
99. Landrace	v. Konaiygorod, Shargorod district, Vinnitza region	Private truck garden
100. Landrace	c. Uman', Chercassy region	Private truck garden
101. Landrace	c. Bar, Vinnitza region	Private truck garden
102. Landrace	c. Kamenetz-Podol'ski, Khmel'nitzki region	Private truck garden
103. Landrace	s. Kozlov, Ternopol' region	Private truck garden
104. Landrace	c. Lityn, Khmel'nitzki region	Private truck garden
105. Landrace	s. Kozlov, Ternopol' region	Private truck garden
106. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
107. Landrace	c. Nemirov, Vinnitza region	Local market
108. Landrace	Ladyzhin district, Vinnitza region	Cottage plot 10 km up the road on Gaysin
109. Landrace	s. Svalyava, Transcarpathian region	Private truck garden
110. Landrace	v. Unyatichi, Drogobych district, L'vov region	Private truck garden
111. Landrace	v. Yaltushkov, Bar district, Vinnitza region	Private truck garden
112. Landrace	v. Nizhnie Vorota, Volovetz district, Transcarpathian region	Private truck garden
113. Landrace	v. Novaya Ushitza, Chmel'nitzki region	Private truck garden
114. Landrace	c. Ostrog, Rovno region	Private truck garden
115. Landrace	v. Kamenetz-Podol'ski, Khmel'nitzki region	Private truck garden
116. Landrace	s. Beregovoe, Transcarpathian region	Private truck garden
117. Landrace	v. Mezherech'e, Chernovtzy region	Private truck garden
118. Landrace	v. Nizhnie Vorota, Volovetz district, Transcarpathian region	Private truck garden
119. Landrace	s. Brovary, Kiev region	Private truck garden
120. Landrace	s. Voytovtzy, Khmel'nitzki region	Private truck garden
121. Landrace	v. Luka-Barskaya, Bar district, Vinnitza region	Private truck garden
122. Landrace	v. Monastyr'sko, Ternopol' region	Private truck garden
123. Landrace	v. Vendychane, Murilovo-Kurilovetz district, Vinnitza Region	Private truck garden
124. Landrace	v. Yasinya, Rakhov district, Transcarpathian region	Private truck garden

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| 125. Landrace | s. Beregovoe, Transcarpathian region               | Private truck garden |
| 126. Landrace | v. Luka-Barskaya, Bar district, Vinnitza region    | Private truck garden |
| 127. Landrace | v. Ternovka, Bershad' district, Vinnitza region    | Private truck garden |
| 128. Landrace | v. Sinyava, Khmel'nik district, Vinnitza region    | Private truck garden |
| 129. Landrace | v. Krushinovka, Bershad' district, Vinnitza region | Private truck garden |

Tomatoes (*Lycopersicon lycopersicum* (L.) Karst ex Farwell