

PRELIMINARY SUMMARY REPORT OF THE
NETHERLANDS-PAKISTAN GERMLASM EXPEDITION
TO CHITRAL AND SWAT (PAKISTAN) 1976

organized by

Foundation for Agricultural Plant Breeding (S.V.P.)
Wageningen, Netherlands

The main target of the expedition was to collect germ plasm and thus conserving the genetic variability of especially wheat and barley, but also of maize, grasses and pulses, which still exist in local varieties grown in the remote, inaccessible regions of Northern Pakistan. The second aim was to create a possibility for comparing the 1935 situation with today's as far as genetic erosion is concerned.

The expedition was organized by the Foundation for Agricultural Plant Breeding (S.V.P.) at Wageningen, and most of the preparatory work was carried out in co-operation with a dutch group of mountaineers. Many arrangements were made with the Agricultural Research Council (A.R.C.) at Islamabad, and this has resulted in a plant collecting expedition with a complete joint Netherlands-Pakistan character. This expedition was made possible through sponsoring by FAO (IBPGR) (finances), S.V.P. (members, finances) and A.R.C. (members, jeeps).

Members of the team were M. Mesken (leader; S.V.P., Wageningen) ^{NLDO}, H.D. Mastebroek (S.V.P., Wageningen), W. Lange (S.V.P., Wageningen, temporary at Braunschweig), A.R. Rao (Dept. of Botany, ^{PAK03} Agric. University, Lyallpur), A. Shakoor (Nuclear Institute, ^{PAK02} Lyallpur) and M. Latif Shad (A.R.C., Islamabad).

The expedition started on 3 July, and the route is shown on the map (Appendix I). With the two A.R.C.-jeeps the first collections were made between Swabi and Daggar, and after reaching Saidu/Mingora trips were made through the Swat-district up to Kalam. This coarse grid collection work resulted in 124 samples from 30 sites. On 12 July the team proceeded via the Lawari-pass to the Chitral district, where first the areas north and south of the town Chitral were sampled. The group traveled to Booni on 18 July with rented Willy's jeeps (roads too narrow for A.R.C. jeeps). After two days of sampling in this

area the camp was moved to Drasan and the team splitted up in three groups, each consisting of a Netherlands and a Pakistan member. Because the jeepable road ended here, further collection work in this area was done on foot. One group (with donkeys for luggage) made a trip to Shagram and Zundrangram and via the Zani-pass back to Drasan. The second group (also with donkeys for luggage) made collections in the Rich Gol valley and the third group sampled in the villages near Drasan returning each evening to the camp. On 29 July the whole team drove by rented jeep via Booni to Awi. From here the team proceeded on horseback to Mastuj where two groups went in southern direction for sampling up to Sor Laspur. They returned in Chitral on 5 August. The third group succeeded in reaching Dobargar, north in the Yarkhun valley, from where they returned to Chitral on 8 August. At the same day the first two groups started for a trip to the valleys north of Chitral, to Shoghor and Garm Chasma, making use of porters and horses. From 14 to 17 August two of the three Kafir-Kalash valleys (Birir and Bumboret) had been visited; the third valley, Rumbur, was unreachable because 7 bridges had been washed away. On 18 August the return-journey by A.R.C.-jeeps commenced and via Dir and Peshawar the expedition ended in Islamabad on 20 August. From 20 to 26 August many organizational matters were dealt with, discussions were held at A.R.C. and the Netherlands Embassy and preparations were made to send the samples to the Netherlands before the dutch participants departed from Pakistan. The entire Chitral district could only be covered by splitting up the team into 3 groups. This proved to be efficient and resulted in a total number of nearly 1200 samples from 176 sites (part of the samples was collected by two mountaineers). Among these were many mixtures of different crops, so after separating the total number of entries will be much higher. In Appendix II the number of samples per region and per crop or group of crops are given.

The cultivated crops collected include wheat (*T.aestivum*, *T. durum*, *T. compactum*, *T. sphaerococcum*, *T. turgidum*), barley (covered and naked), rye (including triticales), maize, rice, millets, pulses (*Vigna*, *Vicia*, *Lenz*, *Cicer*, *Pisum*, *Lathyrus*), oil seeds (*Brassica*), flax, and fodder crops (*Medicago*, *Trifolium*).

Among the wild species collected are: Aegilops spec., Hordeum spec., Agropyron spec., Secale spec., Avena spec., other grasses, Carum spec., Brassica spec., Dancus spec., and Iris spec.

The team tried to obtain samples of about 500 grams, but in many cases this was impossible. The sample size therefore varied from a few grams to one pound of seed. Most of the seeds were collected in cotton bags, the smaller samples of wild species in paper bags. Each sample was divided immediately in two parts, one for the A.R.C. and one for the S.V.P. The majority of the samples were given by the farmers from their bulk of seeds from the already harvested crops. Where possible samples were taken in the farmers field and many wild species were collected as well. In only a few cases seeds were purchased in bazars.

For the organization and interpretation the team received much help from the field assistants of the Extra Assistant Director of Agriculture (EADA) Chitral and from local farmers. With their efforts much information was gathered about the crops and the agricultural systems.

The altitudes from which the samples were obtained range from 460 m in Lower Swat to 3800 m in Upper Chitral.

Up to about 2000 m two crops are grown each year, at greater altitudes only one crop can be grown. The majority of collected germplasm samples were from irrigated crops, only a few samples matured under rainfed conditions.

The team noticed frequently modern varieties of wheat, maize and rice^{*} and in the area around Chitral-town, i.e. regions easy, or at least, not very difficult accessible.

Together with these improved varieties artificial fertilizers and pesticides were used. But in the side-valleys of the Swat River and in the valleys of Upper Chitral, all of them being rather inaccessible, local varieties are still being grown. The impression of the team is that especially in the Swat district severe genetic erosion of wheat has taken place. The

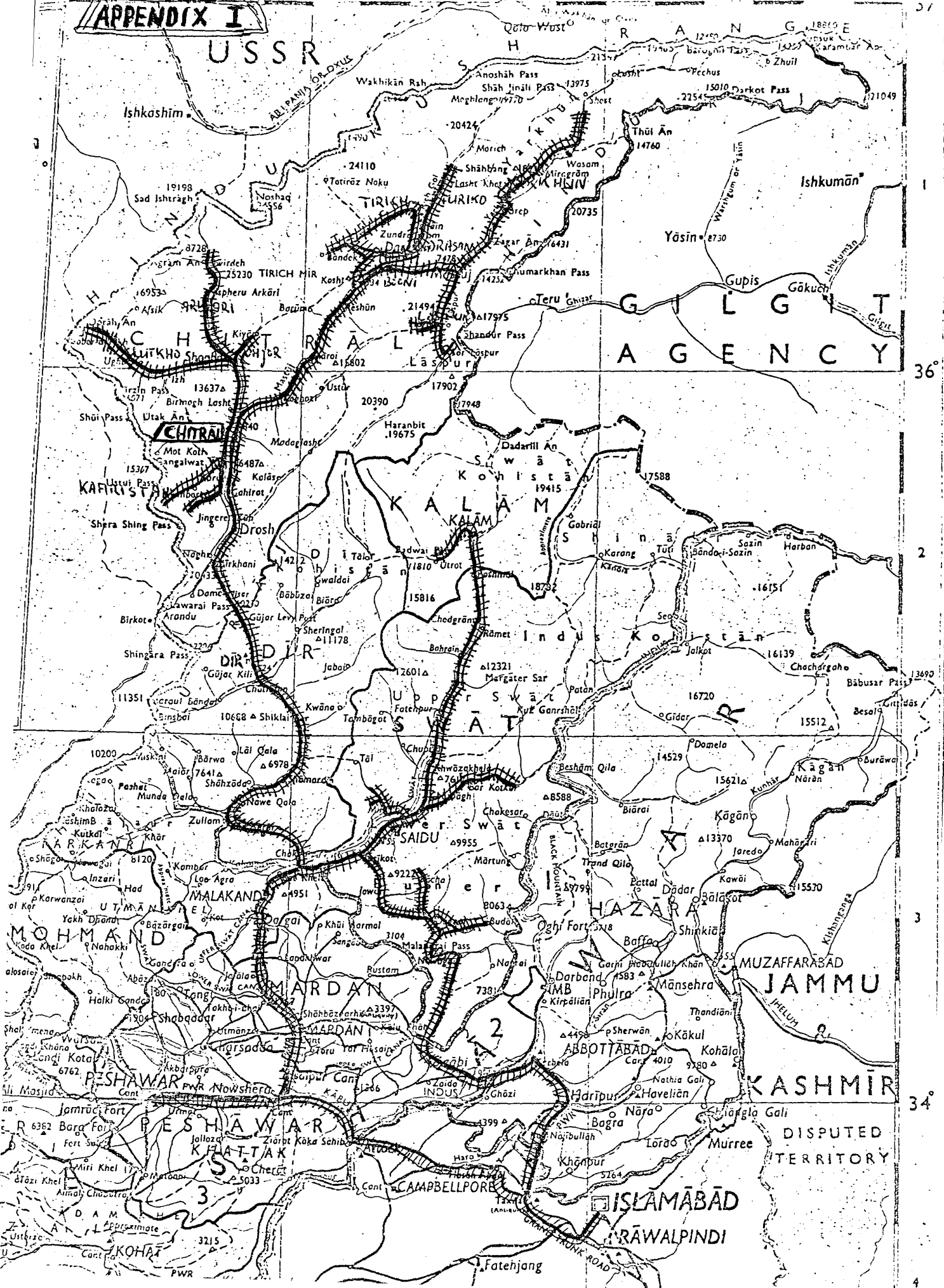
* in Swat along the Swat River

expedition members therefore recommend to organize in short time another plant collecting mission to the remote areas of this district to save the old local varieties which still are grown, but probably not for long any more. Furthermore, the region around Dir would be very much worth to be sampled not only for cultivated crops, but for wild cereals as well.

Looking forward, the follow-up of this expedition will consist of maintenance, multiplication, distribution, evaluation and utilization of the collected germplasm. After adequate storage in Pakistan and in the Netherlands all the samples will be multiplied in 1977, while keeping reference seeds from each sample. By the end of 1977 the collected and multiplied material will be distributed to gene banks and can be obtained by interested institutions on request. The first evaluations will be carried out by A.R.C. and S.V.P. resulting in information from very diverse environments.

Close contacts ensure exchange of data and favor utilization of the collected material in plant breeding programs not only in Pakistan and the Netherlands, but all over the world.

APPENDIX I



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36°

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APPENDIX II

Numbers of samples of crops or groups of crops or species, as collected by the Netherlands-Pakistan Germ Plasm Expedition (NPE) 1976 to Chitral and Swat (Pakistan).

Region or valley	Number of sites	Crops								Total
		wheat	barley	maize	millet	pulses	misc. cultiv. crops	wild cereals	misc. wild species	
Swat	30	32	13	37		21	18	3		124
Dir, Chitral, Booni	28	44	19	17	4	29	5	16		134
Yarkhum, Laspur	32	75	49	19	14	29	10	19	4	219
Drasan, Turiko, Tirich	44	78	52	23	14	51	20	36	12	286
Lutkho, Arkari, Ohjor	30	63	17	32	2	8	5	8	3	138
Kafiristan	12	12	6	12	5	32	5	8	5	85
Total	176	304	156 161 main 55 sub = 216.	140 160 9 = 169	39 63	170	63	90	24	986

The samples collected by the mountaineers are not included in this table.