PLANT GERMPLASM COLLECTION REPORT

USDA
AGRICULTURAL RESEARCH SERVICE
FORAGE AND RANGE RESEARCH LABORATORY

Foreign Travel to:
CANADA
August 4-26, 1980

U.S. Participants

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Germplasm Accessions

Purpose of trip:

To collect seeds and nodules of Medicago sativa L. populations which may have undergone adaptive genetic change as a result of natural selection since their introduction into North America.

Summary:

Potentially useful germplasm was obtained in Alberta, British Columbia, and North West Territory as well as in Idaho in Montana. The history of some populations was sufficiently known to indicate that natural selection for survival attributes had occurred. The winter hardiness of registered Grimm alfalfa increased through several cycles of planting, mortality, harvesting of seeds, and replanting so as to permit it to survive air temperatures of -50C without snow cover. This population escaped from cultivation and competes well with native species on hillsides of the Peace River Valley. The same cultivar, Grimm, also became adapted to the 25 cm annual precipitation environment of a ranch in southeastern Alberta where it has been grown for hay for several generations with Agropyron desertorum. Seeds of thirty-one such strains were collected and nodules found at twenty-three of these sites. Twenty-two accessions of other species were collected and nodules obtained for five of them. Seed was not mature in central British Columbia. Accessions from that region and from locations in the Yukon and Montana which were not visited may possibly received at a later time by mail.

Travel details:

July 30- Traveled from Logan, Utah to Boise, Idaho. Collected seed of several alfalfa from a range planting on the old Seven-L ranch near Mayfield, Idaho. The stand is believed to be 40 years old. Annual precipitation is approximately 25 cm. There was very little seed and the plants were badly damaged by grasshoppers. The soil was very dry and hard and I could not find nodules. Plants are large and abundant. I had earlier visited this site and obtained cuttings on 150 of these plants. These will be hand-pollinated in the green house in 1980-1981 to provide additional seeds. This locations should be visited in the spring of 1981 to obtain nodules. (325.2 miles)

July 31- August 1 - I participated in the Western Alfalfa Improvement Conference at Boise, Idaho. After it was completed, I visited with Dr. Robert Romanko of the University of Idaho Research Station at Parma, Idaho. He had made contact with an Agricultural Extension Agent about some old stands of alfalfa in northern Idaho. I then drove to Weiser, Idaho. (88.2 miles)

August 2 (Saturday) - I met Fred Edmiston, County Extension Agent, in his office in Weiser and we drove to Midvale, Idaho. We collected alfalfa seed from four stands which ranged from 28 to 40 years old. One was a hay field and the others were pastures where the plants were growing with Agropyron desertorum and/or A. intermedium. The soil was very dry and hard and no nodules were found. A 60 year old stand of "Gem" alfalfa was located but it had been cut for hay and we could not find seeds. I then drove to Lewiston, Idaho. (233.1 miles)

August 3 (Sunday) - Traveled to Oroville, Washington (311.0 miles)

August 4 - Crossed the border into Canada and traveled to Oliver, British Columbia. Attempted to meet Mr. E. M. Soder, District Agriculturalist, but found that it was British Columbia Day, a provincial holiday, and that all governmental offices were closed. I drove to Penticton searching for alfalfa meriting collection but all stands proved to be recent and irrigated. (89.8 miles)

August 5 - I had arranged to meet Dr. V. C. Brink, Dean of Agriculture, University of British Columbia, at Mr. Soder's office this morning. Much to my dismay, I learned that Dr. Brink was not there, that Mr. Soder was not there, and that the secretary knew nothing of any prior arrangements. Dr. Brink then telephoned and said that he would not be able to travel with me and that no arrangements had been made with personnel at other locations.

I telephoned several Field Crop Specialists and District Agriculturalists at towns further north without success. All were attending a field day. I did make an appointment to meet the District Agriculturalist at Vernon for 8:00 am the next morning and then proceeded to Vernon, British Columbia. (108.0 miles)

August 6 - Mr. R. T. France, the District Agriculturalists at Vernon, had a prior commitment but did introduce me to S. S. Dhindsa the Field Crop Specialist for the Ministry of Agriculture. He proved to be a very knowledgeable and capable person who was very helpful. We spent the day visiting farms in the area around Armstrong, British Columbia. This was an alfalfa seed producing region at one time but the sold stands have been plowed and replanted with modern cultivars. We did obtain seed of a local strain of Turkestan alfalfa that has been grown in the area since 1915. It was produced on the Gerald Landan farm near Armstrong, B. C. In 1979. The

stand was about 30 years old at the time and has since been destroyed. Traveled to Kamloops, B. C. (74.1 miles)

August 7 - I located Mr. J. C. Ryder, District Agriculturalist, in Kamloops. We went to the Range Research Station near Kamloops where we met Dr. Alastair McLean, Research Scientist, Agriculture Canada. The three of us visited and old research site seeded by E. W. Tisdale in 1936. Triple rod rows of each species int eh experiment had been sown in April with one foot (30 cm) between rows and two feet (60 cm) between varieties. Annual precipitation at the site is 20 cm with a11 cm in the growing season. After 44 years the plots were dominated by Agropyron desertorum and A. spicatum. Tisdale's Summary Report of this experiment states, "Yellow flowered alfalfa (Medicago falcata) was the only legume to maintain itself with a measure of success. It formed a thin stand and grew fairly well but weed control was poor and the stand was declining by 1940." I did locate two plants of Medicago falcata. They were small and morphologically appeared to be very similar to the Utah diploid M. falcata #1 population. I also located 12 plants of a more robust M. sativa type. These were widely scattered and not confined to one old plot area. No nodules were obtained. We then went to a site on the Indian Reserve north of the Thompson River and east of Kamloops. Alfalfa was growing in abundance on what had been a privately owned breeding nursery. All plants that were in bloom had blue-purple flowers. I did obtain nodules here. Traveled to Lac La Hatche, B.C. (145.2 miles)

August 8 - I walked along an old abandoned road paralleling Highway 97 at Lac La Hatche. Medicago lupuline, Melilotus alba, Trifolium hybridum, T. pratense, T. repens, and Vicia americana occurred abundantly but there was no alfalfa. A few of the M. lupulina plants appeared to be quite different than others of that species. The stems were three times as long (1 m) as the rest of the plants and they were of earlier maturity so I collected seeds and nodules.

We drove north on Highway 97 to mile 147 where these is an old stand of alfalfa in a pasture. It is rather extensive and population density of the alfalfa is quite high. All plants in bloom had blue-purple flowers, and were tall, erect, narrow-crowned, and tap-rooted. I obtained both seeds and nodules.

As we continued north I saw a few plants of yellow-flowered Trifolium agrarium growing among those of T. hybridum. They were at only one place 2 km south of Hixson, B. C. We stopped to collect seeds and nodules of it. I also obtained a sample of Vicia americana here. Traveled to Prince George, B.C. (196.2 miles)

August 9 (Saturday) - I telephoned J. N. Tingle, Field Crop Specialist, at his home. We agreed that I should visit the Smithers, B. C. Area and he made an appointment with C. G. Johnstone, the District Agriculturalist at Smithers, for me. I drove to Smithers and Mr. Johnstone accompanied me to an experimental farm which was closed in 1968. We searched an old alfalfa field but could find no seed sufficiently mature to harvest. I did locate ripe seed of Lotus corniculatus in what appeared to be an old nursery or seed increase plot 25 meter square in the center of the alfalfa field. Mr. Johnstone had not known it was there and I later found out that the staff at Prince George had no record of it. The soil was very dry and I could not find any nodules. We searched old stands of alfalfa on several other farms but none had ripe seed. Mr. Johnstone

will attempt to collect some at a later time and will mail them to me. Drove to Houston, B.C. (265.5 miles)

August 10 (Sunday) - Traveled back to Prince George, B. C. I examined an old mission site but could not identify any alfalfa as belonging to an old stand. I contacted J. N. Tingle and we visited an old field of alfalfa but could not find mature seed pods. He will attempt to collect it for me. Dr. William Pringle, Superintendent of the Experimental Farm at Prince George was out of town. (214.0 miles)

August 11 - We drove northward and at the Pine River Overlook at Mile 173 south of Chetwynd, B. C. I found Melilotus officinalis 1.5-2.0 meters tall which was earlier than the other sweet clover I had been seeing. It was growing in almost pure shale with a pH of 5.5 so I collected both seeds and nodules. Melilotus alba and officinalis grow abundantly along the roads in B. C. as do the Trifolium species. Traveled to Hudson's Hope, B. C. (235.9 miles)

August 12 - Visited the Leo Rutledge farm 15 km north of Hudson's Hope. He had two fields of interest. He obtained registered seed of Grimm alfalfa sometime after arriving in that area in 1920. Mortality due to winter-kill was quite high but as he harvested seed and replanted fields that populations became well adapted. One field which was isolated from other alfalfa had been plowed up in 1979 but had been productive for 20 years. Seed form that field had been carried by natural agents up the adjoining hillside where the alfalfa plants were growing wild in competition with native species. Mr. Rutledge stated that these plant survived air temperatures of -50C without snow cover. Both seeds and nodules were obtained.

A second population of alfalfa adjacent to the house was growing in almost pure sand. It originated as Grimm but had been crossed with Latex from an adjoining field of 20 years ago. Both seeds and nodules were collected.

Old stand of alfalfa on the Dick Ardill farm also were examined but the seed was too immature to collect. Drove to Charlie Lake, B.C. (50.4 miles)

August 13 - Drove north on the Alaska Highway for a short distance. Saw no alfalfa after leaving the paved section of the highway. I did located some plants of Astragalus cicer which apparently were survivors of a road bank seeding at km 138. They did not appear to be `Oxley' and I collected both seeds and nodules. I searched the woods for Vicia americanum and other species of interest. I found many plants but no seeds. Returned to Charlie Lake, B. C. (123.1 miles)

August 14 - Traveled to Dawson Creek, B. C. Both the Field Crop Specialist, Mr. J. L. Dobb, and the Community Pasture Agrologist, Mr. Ross Green, were out of town. I explained the purpose of my trip to the secretary and asked that any available information on old stands be telephoned on to Dr. J. S. McKenzie at Beaverlodge, Alberta. I threshed and cleaned seed the rest of the day. (59.2 miles)

August 15 - Traveled to Beaverlodge, Alberta. I toured the Agriculture Canada Research Station with Dr. J. S. McKenzie, Plant Physiologist, and then with Dr. W. A. Rice, Microbiologist. The

facilities and staff are excellent and significant research on the physiology of winter hardiness and nitrogen fixation of alfalfa is being conducted. (66.7 miles)

August 16 (Saturday) - Traveled to Ft. Vermillion, Alberta. Dr. McKenzie accompanied us. We stopped at Dunvegan, Alberta to collect alfalfa. This had been a Hudson Bay trading Post and Mission site on the Peace River. We located the old Red River car road where it left the valley and went up the adjoining hills. This road was last used about 1905 but the ruts are still noticeable although overgrown with vegetation. Alfalfa apparently was transported on the road as we found wild plants for some distance adjacent tot eh road where it went up the hills. These were competing well in the native vegetation. All were blue-purple flowered, tall, erect, narrow-crowned, tap-rooted and some were nodulated.

We also visited the St. Augustine Mission Chapel site near the town of Peace River, Alberta. At one time a ferry crossed the Peace River here but this service was discontinued when a bridge was constructed in the town. A former District Agriculturalist at Peace River had reported that alfalfa had been growing there for many years. We did not find any alfalfa growing in the grounds surrounding the chapel. A road now parallels the river at this point and the ditches and banks had been seeded with alfalfa. The ferry landing and any remnant of the old alfalfa stand could not be detected. We continued on to the Experimental Farm at Ft. Vermillion, Alberta. (399.0 miles)

August 17 (Sunday) - Ben Siemens, Superintendent of the Experimental Farm, joined us to travel to the North West Territory. There was alfalfa at Ft. Providence in what had been a pasture adjacent to the horse barn at the mission. Age of this stand in uncertain but it had been there as long as any of the local residents could remember. All plants were blue-purple flowered and many had exceptionally long racemes. All were badly diseased with blackstem (Phoma medicaginis) and we also found lygus bugs. Seeds and nodules were collected. Alfalfa is no longer grown for feeding horses in this region. Any remnants of former pastures or hayfields are believed to have been seeded at least 30-50 years ago. We re-crossed the MacKenzie River on the ferry and went to Hay River, North West Territory. (418.6 miles)

August 18 - Went to Ft. Resolution, North West Territory. An old field of alfalfa was known to have been growing on land owned by the Catholic Mission south of the town. We discovered that a sawmill had been built on that site six years ago. However, plants had escaped to an adjacent residence and we were able to collect both seeds and nodules. There were plants with variegated flowers at this location. Age of the stand is uncertain but known to be more than 25 years.

We also collected alfalfa seeds and nodules in the village of Ft. Smith at the location of the former Brandin College. This had been a type of high school operated for the local Indians. I believe that there are two intergrading populations here. The area extends from a playground adjacent to the swimming pool to the museum. There were many yellow and variegated flowered plants by the swimming pool and none by the museum. We obtained both seeds and nodules.

Traveled to Ft. Fitzgerald. At one time it was an important ferry crossing and trading post on the Slave River. Now there are only four houses left but we located alfalfa plants along a trail south

of the old ferry landing. Plants were localized within a distance of 50 meters on both sides of the trail. This populations was well nodulated, had highly variegated flowers, and the seed was quite immature. We then returned to Hay River. Almost all of the roads traveled this day were gravel and dirt and were extremely dusty. (494.2 miles)

August 19 - Returned to Ft. Vermillion, Alberta. I collected small quantities of seeds of Agropyron trachycanlum at the Steer River crossing and of alfalfa in a field 20 km north of Ft. Vermillion. This was a local strain of Grimm obtained by the Ft. Vermillion Experimental Farm in 1930. It was distributed by giving each interested farmer one "tobacco can" of seed and the population is still used in the Ft. Vermillion area. The seed field was about 10 hectares in size and being pollinated by leaf cutter bees. Plant were well nodulated. (247.9 miles)

August 20 - It rained all night and the roads were very muddy where construction was in progress. We left Jim McKenzie at Valley View, Alberta and drove to Little Smoky, Alberta. I collected Elymus candersis and alfalfa along the west bank of the Washkihiga River by the old ford and campground. (342.2 miles)

August 21 - We cleaned the dust, dirt and mud from the vehicle, threshed seeds and drove to Edmonton, Alberta. (184.4 miles)

August 22- Drove to the University of Alberta in Edmonton and visited the Genetics Department. Dr. J. Weijer who is working with Hedysarum and Astragalus species and Dr. K. Lesins were both absent. I went to the Devonian Botanic Gardens and examined their plantings. Astragalus flexuosis, A. frigidus, Hedysarum alpinum, and Linum lewisii seeds were obtained but only very small quantities. (46.4 miles)

August 23 (Saturday) - Traveled to Bartha, Alberta. Searched for plant materials along the way but found nothing of interest. (159.3 miles)

August 24 (Sunday) - Traveled to Consort, Alberta. Tried to thresh and clean seeds but the weather was too rainy and windy. Searched Gooseberry Lake Provincial Park which formerly was owned by the Hudson Bay Company for alfalfa but found none. (91.0 miles)

August 25 - I met the staff of the Special Areas Office in Consort and traveled with Mr. A. E. Spencer to a number of farms in the vicinity of Consort. Alfalfa seeds were obtained from seven old stands and nodules from five of these. These fields were seeded 27-50 years ago. One location was the site of the Consort Experimental Farm which was active form 1928 to 1945. Drove to the Saskatchewan River bridge south of Acadia Valley, Alberta. (145.4 miles)

August 26 - Traveled to Manyberries, Alberta where I met Sylver Smoliak from the Lethbridge Research Station. We went to the Range Research Station at Onefour, Alberta. Ladak alfalfa was seeded here with Agropyron desertorum in 1928 by S. E. Clark. The station receives about 30 cm precipitation annually. Alfalfa plants were abundant and quite variable in morphology. Many had

falcate seed pods. None were in bloom but Sylver said that many have yellow flowers. Although the soil was very dry I did find some nodules.

We next drove to the Heydlauff ranch east of Wildhorse, Alberta. Ten pounds of Grimm alfalfa seed was first sown there in 1928. Mortality was very high but seed was harvested and replanted several times with increasing survival each cycle. We found an excellent hay field of alfalfa and Agropyron desertorum. Average annual precipitation at the ranch was not known, but probably in 25-30 cm. I dug many plants but found only a few small nodules. Some seed was obtained.

I then crossed the border and drove to Havre, Montana. (256.4 miles)

August 27 - Traveled to the R. S. Turner ranch north of Chester, Montana. His father obtained 2 ounces (60 g) of seed or Orenerg alfalfa from Dr. N. C. Hansen of South Dakota State University of 1920. The seed was sown in a 25 m square, fenced garden at that time and the original planting remains. Plants are very variable in growth habit but generally are variegated in flower color and have fibrous roots. I was able to obtain nodules but there was no seed. In 1977 I had obtained seed of this population by mail. This was increased in isolation at Nephi, Utah and 1979 crop year seed is being included in the plant collection to correspond with the nodules collected at the Turner Ranch. Drove to the Timber Dam Campground south of Chester. (174.0 miles)

August 28 - Went to Choteau, Montana and contacted the local Soil Conservation Service office. They located Mr. Les Otness who has remnant plants of Cossack alfalfa growing wild in a shelter belt. These reportedly trace back to seed obtained in 1910 which was the year that N. E. Hansen assigned the name Cassack to P.I. 20714. Seed was very scarce and only 1 nodule was found. The soil was very dry and rocky. We tried to contact 2 other area ranchers who are known to have old stand of alfalfa but could not locate them. Drove to Great Falls, Montana. (172.6 miles)

August 29 - Drove to Stanford, Montana. Collected seeds of Lupinus sericeus on the way. Obtained both seeds and nodules of alfalfa from the Tom Evans ranch. These plants are growing in the range and apparently were started many years ago by feeding hay in the winter. The cultivars used are not known. Annual precipitation is approximately 40 cm.

We next went to the Central Agricultural Research Center near Moccasin, Montana where Art Dubbs showed us two old stands of alfalfa. One was first established in 1910 on a gravel area exposed when the top soil was removed during construction of a railroad. An excellent stand of alfalfa was growing with Agropyron desertorum. Occasionally screenings from seed cleaning operations are discarded on this site so some of the germplasm may be of more recent origin. Seed was readily available but I found only a very few, very small nodules.

The second stand was sown in 1930 with A. desertorum and has been cut for hay since. I obtained seeds from plants at the margin of the field which had escaped the mower and found a few small nodules. Drove to Harlowton, Montana. (131.0 miles)

August 30 (Saturday) -Drove to Idaho Falls, Idaho. (312.7 miles)

August 31 (Sunday) - Threshed and cleaned seed prior to returning to Logan, Utah. (150.3 miles) Total distance driven was 6,311.0 miles.

ACCESSIONS

452446 TO 452449. Agropyron trachycaulum (Link) Malte ex. H. F. Lewis (Poaceae) Slender wheatgrass.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980 Domestic - Canada Medicago Germplasm Collection. Received September 1980.

452446. R-25. Collected August 18, 1980. Landing on Slave River, Ft. Fitzgerald, Alberts. 200M. Lat. 59 deg. 30' N, long. 111 deg. 50' W. Wild. Seed.

452447. R-27. Collected August 19, 1980. Steen River Bridge Public Campground, 5 km north of Steen River, Alberta. 300M. Lat. 59 deg. 30' N, long. 117 deg. W. Wild. Seed.

452448. R-28. Collected August 20, 1980. Roadside rest stop, Highway 35, 10km north of Paddle Prairie, Alberta. 250M Lat. 57 deg. 50' N, long. 117 deg. 30' W. Wild. Seed.

452449. R-29. Collected August 20, 1980. North, 5km of Hotchkiss, Alberta. 300M. Lat. 117 deg. 30' N, long. 56 deg. 50' W. Wild. Seed.

452450. Astragalus americanus (Hook.) M. E. Jones (Fabaceae) Milkvetch.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-33. Canada. Edmonton, Devonian Botanic Gardens, University of Alberta. Collected August 22, 1980. Five km southwest of Edmonton. 664M. Lat. 53 deg. 15'N, long. 113 deg. 30'W. Received as Astragalus frigidus var. americanus. Cultivated. Seed.

452451. Astragalus cicer L. (Fabaceae) Cicer milkvetch.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980 Domestic - Canada Medicago Germplasm Collections. Received September 1980.

R-19. Collected August 13, 1980. Road bank, Alcan Highway, 63 km N of Ft. St. John, British Columbia. 700 M. Lat. 56 N., long. 121 deg. With few plants. Nodule sample. Seed.

452452. Astragalus flexuosus (Hook.) G. Don (Fabaceae) Flexile milkvetch.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-34. Canada. Edmonton. Devonian Botanic Gardens, University of Alberta. Collected August 22, 1980. Five km southwest of Edmonton. 665M. Lat. 53 deg. 15' N. long. 113 deg. 30' W. Cultivated. Seed.

452453. Caragana arborescens Lam. (Fabaceae) Siberian pea-tree.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-16. Collected August 12, 1980. Sand terrace of Peace River, L. Rutledge farm, 16 km N of Hudson's Hope, B.C. 400 M. Lat. 55 deg. 30' N, 122 deg. 30' W. Plants 3m tall. Cold tolerant. Wild. Seed.

452454. Elymus canadensis L. (Poaceae) Canada wildrye.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-30. Collected August 20, 1980. Waskahigan River and Hwy. 43, 2 km NW of Little Smoky, Alberta. 500M. Lat. 54 deg. 30' N, long. 117 deg. 30'W. Wild. Seed.

452455. Elymus innovatus Beal (Poaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-27a. Collected August 19, 1980. Steen River Bridge Public Campground, 5 km N of Steen River, Alberta. 300M. Lat 59 deg. 30' N, long. 117 deg. 115' W. Wild. Seed.

452456. Hedysarum alpinum L. (Fabaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-32. Canada. Edmonton. Devonian Botanic Gardens, University of Alberta. Collected August 22, 1980. Five km southwest of Edmonton. 665M. Lat. 53 deg. 15' N, long. 113 deg. 30' W. Cultivated. Seed.

452457. Linum lewisii Pursh (Linaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-35. Canada. Edmonton. Devonian Botanic Gardens, University of Alberta. Collected August 22, 1980. Five km southwest of Edmonton. 665 M. Lat. 53 deg. 15' N, long. 113 deg. 30' W. Cultivated. Seed.

452458. Lotus corniculatus L. (Fabaceae) Birdsfoot trefoil.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-14. Collected August 9, 1980. Old experimental farm, 5 km E of Smithers, B.C. 500 M Lat. 54 deg. N, long. 128 deg. W. Mixed with alfalfa. Origin unknown. Cultivated. Seed.

452459. Medicago lupulina L. (Fabaceae) Black medic.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-10. Collected August 8, 1980. Roadside, 6km S of Lac La Hache, B.C. 900M lat. 51 deg. N, long. 121 deg. W. Stems 1 m long. Nodule sample. Wild. Seed.

452460. Medicago sativa subsp. Falcata (L.) Arc. (Fabaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-7. Collected August 7, 1980. NE, 5km of Research Station Headquarters, Kamloops, B.C. 365M. Lat. 50 deg. N, long. 120 deg. W. Seeding by Dr. Tisdale in 1936. Two plants surviving. Received as Medicago falcata. Cultivated. Seed.

452461 TO 452483. Medicago sativa L. (Fabaceae) Alfalfa.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

452461. R-6 `Turkestan'. Collected August 6, 1980. G. Landan farm, 1.5km N of Armstrong, B.C. 500M Lat. 50 deg. N, long. 119 deg. W. Thirty-year old field, 1979 seed. Same type grown since 1915. Cultivated. Seed.

452462. R-8. Collected August 7, 1980. 5km NE of Research Station Headquarters, Kamloops, B.C. 365M. Lat. 50 deg. N, long. 120 deg. W. Seeding by Dr. Tisdale in 1936. Only 12 plants in field. Cultivated. Seed.

452463. R-9. Collected August 7, 1980. Kamloops Indian Reserve, 6 km E of town, N of Thompson River, Kamloops, B. C. 415 M. Lat. 50 deg. N, long. 120 deg. W. Abandoned breeding nursery. Nodule sample. Cultivated. Seed.

452464. R-13. Collected August 8, 1980. Mile 147, Highway 97, 2 km S of Hixson, B.C. 750M Lat. 52 deg. 30' N. Long, 122 deg. W. Plants tall, tap-rooted. Stems coarse. Crowns narrow. Flowers blue-purple. Pods coiled. Nodule sample. Cultivated. Seed.

452465. R-17. `Grimm' x `Ladak'. Collected August 12, 1980. Sand terrace of Peace River, L. Turledge farm, 16km N of Hudson's Hope, B.C. 400M. Lat. 55 deg. 30' N. Long. 122 deg. 30' W. Plants 20-30 years old. Cold tolerant. Nodule sample. Cultivated. Seed.

452466. R-18. Collected August 12, 1980. Hillside, on L. Rutledge farm, 16km N of Hudson's Hope, B. C. 400-600M. Lat. 55 deg. 30' N, Long. 122 deg. 30' W. Plants abundant, escaped from 30-year old field. Traces back to a 60-year old `Grimm' population. Cold tolerant. Nodule samples. Wild. Seed.

452467. R-20. Collected August 16, 1980. Hillside, Near gravel road, Dunevegan Hudson Bay Post, B.C. 475M. Lat. 55 deg. N, long. 119 deg. W. Plants escaped from stand more than 25 years old. Plats erect, tap-rooted. Crowns narrow. Flowers 100% blue-purple. Nodule sample. Wild. Seed.

452468. R-21. Collected August 17, 1980. Site of old mission barn, Ft. Providence, North West Territories. 168M. Lat. 61 deg. 21' N, long. 117 deg. 40' W. Flowers neither yellow or green. Plants infected with Phoma herbarvin. Nodule sample. Wild. Seed.

452469. R-22. Collected August 18, 1980. Old mission land, ½ km S of Ft. Resolution, North West Territories. 125M. Lat. 61 deg. 10' N, long. 113 deg. 40' W. Stand more than 30 years old. Plants tall, erect. One yellow-flowered plant. Nodule sample. Wild. Seed.

452470. R-23. Collected August 18, 1980. Sandy soil. Former Site of Brandin Coll., Ft. Smith, North West Territories. 175M. Lat. 60 deg. N, long. 111 deg. 53' W. Stand more than 25 years old. One pure purple-flowered population intergrading with a highly variegated one. Nodule sample. Wild. Seed.

452471. R-24. Collected August 18, 1980. Trail, south of old ferry landing, Ft. Fitzgerald, Alberta. 200M. Lat. 59 deg. 30' N, long. 111 deg. 50' W. Stand more than 15 years old. Flowers highly variegated. Seeds immature and sparse. Nodule sample. Wild. Seed.

452472. R-26. `Grimm'. Collected August 19, 1980. Field, 18 km northwest of Ft. Vermillion, Alberta. 330M. Lat. 58 deg. 30' N. long. 116 deg. W. Seeds first obtained by the Ft. Vermillion Experiment Station around 1930. Grown locally. Well nodulated. Nodule sample. Cultivated. Seed.

452473. R-31. Collected August 20, 1980. Campground by Ford of the Waskahigan R., 2km NW of Little Smokey, Alberta. 500M. Lat. 54 deg. 30' N, long. 117 deg. 30' W. Nodule sample. Wild. Seed.

452474. R-36. Collected August 25, 1980. M. A. Gould farm, SW 1/4, Sec. 27, R6 T34, 8km south of Consort, Alberta. 700M. Lat. 52 deg., N, long. 111 deg. W. Field seeded in 1946. Cultivated. Seed.

452475. R-37. Collected August 25, 1980. G. Dropinske farm, NW 1/4, Sec. 34, R6 T34, 4km south of Consort, Alberta. 700M. Lat. 52 deg. N, long. 111 deg. W. Old stand. Flowers variegated. Cultivated. Seed.

452476. R-38. Collected August 25, 1980. G. Dropinske farm, NW 1/4, Se. 34, R6 T34, 4km south of Consort, Alberta. 700M. Lat. 52 deg. N, long. 111 deg. W. Field seeded in 1930. Plants scattered. Nodule sample. Cultivated. Seed.

452477. R-39. Collected August 25, 1980. C. Fawcett farm, SE 1/4, Sec. 27, R6 T35, 2km north of Consort, Alberta. 700M. Lat. 52 deg. N, long. 111 deg. W. Former Consort Experiment Farm. Field seeded in 1935. Two plants with yellow flowers. Nodule sample. Cultivated. Seed.

452478. R-40. Collected August 25, 1980. E. & C. Fawcet farm, SE 1/4, Sec. 29, R6 T35, 3km NW of Consort, Alberta. 700 M. Lat. 52 deg. N, long. 111 deg. W. Field seeded in 1945. Flowers variegated. Nodule sample. Cultivated. Seed.

452479. R-41. Collected August 25, 1980. G. Simkin farm, SW 1/4, Sec. 28, R6, T34, 3km NW of Consort, Alberta. 700M. Lat. 52 deg. N, long. 111 deg. W. Field seeded in 1953. Flowers variegated. Nodule sample. Cultivated. Seed.

452480. R-42. Collected August 25, 1980. R. & J. Hansen farm, NW 1/4, Sec. 28, R6 T34, 4km NW of Consort, Alberta. 700M. Lat. 52 deg. N, long. 111 deg. W. Field seeded in 1948. Flowers highly variegated. Nodule sample. Cultivated. Seed.

452481. R-43. `Ladak'. Collected August 26, 1980. Onefour, Alberta Research Station Relict Area, Onefour, Alberta. Lat. 49 deg. 5' N, long. 110 deg. 10' W. Field seeded in 1928 by S. E. Clark. Many plant with falcate pods. Nodule sample. Cultivated. Seed.

452482. R-44. `Grimm'. Collected August 26, 1980. Heydlauff Ranch, 5km NE of Wild Horse, Alberta. Seed obtained in 1928. Reseeded afterwards. Pods tightly coiled. Nodule sample. Cultivated. Seed.

452483. R-53. 'Peace`. Canada. Beaverlodge, Alberta. Agriculture Canada, Research Station. Collected September 04, 1980. Donated by J. S. McKenzie. Cultivated. Seed.

452484. Melilotus officinalis Lam. (Fabaceae) Yellow sweet clover.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-15. Collected August 11, 1980. Mile 173, Hart Highway, 50km S of Chetwynd, British Columbia. 600M. Lat. 55 deg. N, long. 121 deg. W. Plants 2m tall. Early maturity. Soil pH 5.5. Nodule sample. Wild. Seed.

452485. Trifolium aureum Poll. (Fabaceae) Hop clover.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-11. Collected August 08, 1980. Highway 97, 10km south of Hixson, British Columbia. 750M. Lat. 52 deg. 30' N, long. 122 deg. W. Possibly an inadvertent mixture with T. hybridum. Used for road bank seeding. Received as Trifolium agrarium. Nodule sample. Wild. Seed.

452486. Vicia americana Muhl. ex Willd. (Fabaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-12. Collected August 08, 1980. Woods along Highway 97, 10km south of Hixon, British Columbia. 750M. Lat. 52 deg. 30' N, long. 122 deg. W. Many vigorous plants, climbing to 2m. Nodule sample. Cultivated. Seed.

452487. Linum lewisii Pursh (Linacae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-48. Collected August 29, 1980. Highway 87, 6km northwest of Stanford, Montana. 1200M. Lat. 47 deg. N, long. 110 deg. 10' W. Wild. Seed.

452488. Lupinus sericeus Pursh (Fabaceae).

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

R-47. Collected August 29, 1980. Gravel road bank, Highway 87, 10km southeast of Geyser, Montana. 1220M. Lat. 47 deg. N, long. 110 deg. 30' W. Wild. Seed.

452489 TO 452498. Medicago sativa L. (Fabaceae) Alfalfa.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

452489. R-1. `Sevelra'. Collected July 30, 1980. Seven-L Ranch, 1.5km north to exit 71 on I- 80, Mayfield, Idaho. 1150M. Lat. 44 deg. N, long. 116 deg. W. Forty-year old pasture. Plant badly desiccated. Grasshopper damage. Little seed. Wild. Seed.

452490. R-2. Collected August 02, 1980. P. Sutton farm, 5.6km south of Midvale, Idaho. 1000M. Lat. 44 deg. 30' N, long. 117 deg. W. Thirty-year old hayfield. Few variegated plants. Plants desiccated. Grasshopper damage. Possibly `Ranger'. Cultivated. Seed.

452491. R-3. Collected August 02, 1980. W. Sutton farm, 8km northeast of Midvale, Idaho. 975M. Lat. 44 deg. 30' N, long, 117 deg. W. Forty-year old upland pasture. Plants mixed with crested and intermediate wheat grasses, and sage brush. Cultivated. Seed.

452492. R-4. Collected August 02, 1980. D. Guertner farm, 12km south of Midvale, Idaho. 1025M. Lat. 44 deg. 30' N, long. 117 deg. W. Thirty-year old pasture. Plants mixed with intermediate wheat grass. Pods coiled. Cultivated. Seed.

452493. R-5. Collected August 02, 1980. Milt Branch Ranch, 25km northeast of Midvale, Idaho. 1150M. Lat. 44 deg. 30' N, long. 117 deg. W. Twenty-eight year old pasture. Plants mixed with crested and intermediate wheat grass. Flowers variegated. Yield excellent. Possibly `Ranger'. Cultivated. Seed.

452494. R-45. `Orenberg'. Collected August 27, 1980. R. S. Turner Ranch, 50km north of Chester, Montana. 1000M. Lat. 48 deg. 50' N. long. 111 deg. W. Old stand. Invaded by Agropyron cristatum. Nodule sample. Cultivated. Seed.

452495. R-46. `Cossack'. Collected August 28, 1980. Les Otness Ranch, SW 1/4, Sec. 8, T24N R4W, 5km NE of Choteau, Montana. 1100M. Field Seeded in 1910. Flowers blue- purple. Seed scarce. Nodules scarce. Nodule sample. Cultivated. Seed.

452496. R-49. Collected August 29, 1980. T. Evans Ranch, 6km northwest of Stanford, Montana. 1200M. Lat. 47 deg. N, long. 110 deg. 10' W. Old stand spread over rangeland. Nodules scarce, small. Nodule sample. Cultivated. Seed.

452497. R-51. Collected August 29, 1980. Central Montana Agricultural Research Center, 2km W of Moccasin, Montana. 1323M. Lat. 47 deg. N, long. 110 deg. W. Field seeded in 1910. In crested wheatgrass. Flowers variegated. Few small nodules. Nodule sample. Cultivated. Seed.

452498. R-52. Collected August 29, 1980. Central Montana Agricultural Research Center, 2km W of Moccasin, Montana. 1323M. Lat. 47 deg. N, long. 110 deg. W. Field seeded in 1930 with crested wheatgrass, Used for hay. Flowers variegated. Nodules few, small. Nodule sample. Cultivated. Seed.

452499 TO 452501. Medicago sativa L. (Fabaceae) Alfalfa.

From Canada. M. D. Rumbaugh, USDA Crops Research Laboratory, Utah State University, Logan, Utah. Received through 1980. Domestic - Canada Medicago Germplasm Collection. Received September 1980.

452499. R-54. Collected December 05, 1980. M. Slovak farm, SW 30-13-26-Wr, NE of Claresholm, Alberta. Rocky area with light soil. Plants more than 25 years old, scattered among bromegrass. Cultivated. Seed.

452500. R-55. Collected December 05, 1980. D. Leeds farm, SE 6-13-27-W4, NE of Claresholm, Alberta. Agropyron desertorum alfalfa pasture seeded in 1932. Stand thin. Cultivated. Seed.

452501. R-56. `Ladak'. Collected December 05, 1980. G. Chattaway farm, NE 2-16-2-W5, west of Nanton, Alberta. Seeded with creeping red fescue in 1954. Stand 50% in 1980. Used for pasture and hay. Cultivated. Seed.