A Vineyard Travelogue of the Baltics and Belarus

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[Note: This report was first published in 1998. The descriptions of varieties in this report reflect the observations made during our 1998 USDA trip to the Baltics. Since then, we have continued to gather information on these varieties annually. Our book, *Northern Winework*, reflects that ongoing data collection effort. Hence, the most up to date descriptions of these varieties can be found in the book.]

After ten years of researching, letter writing, and e-mail exchanges, Tomís interest in grape breeding made him want to see the huge collection of grape varieties in Belarus, Estonia, Latvia, and Lithuania that were almost unknown to the western world. Some were collected from remote parts of the former Soviet Union. Some were the work of Paul Sukatnieks, a grape breeder well known in Latvia. Tom convinced Bob to come along and demonstrate modern winemaking technique and judge grapes for winemaking potential. Then Tom convinced the USDA to partially fund an expedition with the following objectives:

1) Examine and eventually import through the USDA quarantine system, grape germplasm from the Baltic countries and Belarus,
2) Export contemporary winemaking techniques to Latvia via hands-on, "on the farm" collaboration and advising during the harvest season, and
3) Lay the groundwork for future collaboration with grape breeders in the Baltics.

We believe the USDA recognized that exploration and first-hand documentation of these Baltic and Belarussian grape selections could be important to parts of North America that experience cold winters and/or extremely cool and wet summers. Importation of the best selections would provide the grape industry in these regions with valuable new material in the cool climate viticulture world to grow and to use in breeding. Severe winter areas, including Minnesota, North and South Dakota, and Western Wisconsin, need grape germplasm with extreme winter hardiness to support both their grape breeding programs and fledgling commercial vineyards. In Maine and Vermont, the Lake Superior shore, and Puget Sound, successful viticulture is constrained by an extremely cool and, in some cases, wet growing season. Likewise for parts of Canada--Nova Scotia, New Brunswick, and Eastern Ontario. Varieties that could grow well in these cool wet regions, set fruit and ripen fully would be a boon to area viticulture.

We traveled from 27 August through 18 September in Latvia, Estonia, and Belarus, exploring both private and institutional vine collections, delivering seminars and lectures on grape breeding, grape growing, and modern winemaking, and meeting with grape breeders. Then we made a swing through Copenhagen and the Skane region in southern Sweden. Approximately 150 grape varieties, unknown in the western world, were tasted and evaluated. Most were not fully ripe due to the cool, overcast summer. Many were far from ripe. However, a few varieties were evaluated as truly outstanding for their ability to set and ripen fruit, without disease, in the wet, cool Baltic weather.

The Climate in the Baltic Countries and Belarus

Heat Accumulation

Table 1 shows the average annual heat accumulation in Latvia, Estonia, Belarus, and Denmark compared to Minnesota and some established winegrowing regions. Figure 1 illustrates their monthly temperatures compared to Minnesota and Bordeaux. Located between 55-60^{o} North Latitude, and with the weather influences of the Baltic Sea, these countries are cool. Presumably too cool for ripening grapes. Yet, everywhere we went, we saw grape varieties that seemed to be quite well-adapted to this climate.

In 1998, Minsk, Pinsk, and Copenhagen all were slightly colder than normal. Rapina, Estonia was the only area that experienced a significantly warmer than normal summer. The Vidzeme vineyard site of Andrash Fazekash, 150km inland from Riga, was exceptionally cool, with phenological indications of vine growth lagging Riga by two

weeks. We compensated for these weather variations in assessing the ability of various varieties to ripen fruit.

Table 1. Heat accumulation in St. Paul, Minnesota and other northern areas.

Location	Degree Days (Base 10°C)*
Bordeaux, France	1353
St. Paul, Minnesota	**1318**
Montreal, Quebec	1202
Geisenheim, Germany	998
Reims, France	995
Stuttgart, Germany	970
Chablis, France	950
Quebec City, Quebec	931
Zurich, Switzerland	899
Plymouth, England	891
Ahrwielor, Germany	887
Minsk, Belarus	882
Mt. Vernon, Washington	850
	827
Thy, Denmark	680
Pinsk, Belarus	660
Rapina, Estonia	600
Riga, Latvia	

Table 2. Frost free season.

Bordeaux	214 Days
Minneapolis	171 Days (150-160 more typical)
Moscow	141 Days
Minsk	140-155 Days
Riga	129-135 Days
Polsamaa County. Estonia	130-150 Days
Copenhagen	166- 230 Days (Studsgard-Sandvig)

Table 3. Average monthly temperatures (°C) in Minneapolis compared to other northern regions.

	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug	Sept.	Oct.
Minneapolis** (-37C)*	0.5	-7.0	-10.0	-8.5	-1.5	7.5	14.5	19.5	22.5	21.5	16.5	10.0
Moscow (-42C)*	-0.5	-7.5	-12.5	-10.0	-4.0	5.5	13.5	16.0	18.0	17.0	11.5	6.0
Minsk (-39C)*	-0.2	-4,7	-6.6	-6.2	-2.1	5.1	12.5	15.6	17.6	15.9	11.4	5.7
Riga (-35C)*	1.7	-2.0	-4.9	-4.6	-1.2	5.1	11.0	15.1	16.9	16.3	12.0	7.0
Polvamaa Co. (Estonia)*** (-43C)*	-0.5	-3.5	-3.7	-6.5	-1.0	5.2	11.3	15.0	17.1	16.6	10.5	5.5
Copenhagen (-24C)*	5.5	3.0	0.5	0.5	2.5	6.5	11.5	15.0	17.0	17.0	14.5	10.0

*Indicates 50-year low temperature
**Represent temperatures at Minneapolis International Airport. Typical winter temperatures outside inner city are 3° to 8°C colder
***Years 1991-1996

Frost-free Season

Entering Latvia from Belarus by rail early in the morning on September 5th, we noticed that the countryside was blanketed with frost. We later learned that a hard frost indeed had hit the low lying sites around a large portion of eastern and southern Latvia. High sites and coastal areas around Riga escaped. Table 2 shows that such an early end to the grape growing season is not unusual in these parts.

Winter Cold

Table 3 shows the average monthly temperatures and 50-year low temperatures for selected cities in Belarus and the Baltics, and in Minnesota. The winter temperatures tend to be moderate in the coastal regions of Estonia and Latvia. Inland, toward Russia and Belarus, the winter climate becomes more continental. The eastern regions of Estonia (e.g. Rapina) and Latvia (e.g. Vidzeme) regularly experience quite severe winter temperatures. The winters in Minsk, Belarus are quite similar to Minneapolis, while in Pinsk, 300km to the south of Minsk, they are more moderate, about like U.S. Zone 5. Winter protection of tender varieties is practiced throughout this region.

Travels Around the Region

Belarus

Over the years, Dr. Romuald Loiko has assembled one of the largest collections of northern grape varieties in the former Soviet Union. Most varieties are for open growing, but there were some fascinating Asian table grapes for plastic house culture. Romuald is a successful grape breeder in his own right, having developed some excellent table grape varieties-- Kosmonauts, Kosmos, and Minski Rossovi. About 300 varieties are split between the Belarusian Research Institute for Fruit Growing in Samokhvalovitchy, near the north-central city of Minsk, and its field station in the southwestern city of Pinsk.

Dr. Loiko organized the one week international conference which commemorated the 50th Anniversary of the Institute's Pinsk experiment station. We were fortunate to travel the entire week with Dr. Loiko and an entourage of other fruit breeders and researchers who were in town for the celebration. With all the social and professional activities related to the celebration, we made many contacts in the grape research and grape growing community. We were also consumed a tremendous amount of food and beverage! We mastered the art of looking like we were drinking without actually drinking! We made feeble efforts at the Russian art of proposing toasts. We taught the Minnesota Rouser to a busload of vodka - inspired Belarusian, and pondered the "What does 'Ski U Mah' mean?" Bob disavows any responsibility for this cultural inspiration.

Among the many highlights of our stay in Belarus were two outings to visit collective farms that specialized in fruit production on a gargantuan scale (one farm was 40,000 acres!). One of the collectives had just planted the largest commercial vineyard in Belarus at 10 hectares (about 25 acres) with another 10 hectares to go in next season. All the vines were varieties developed at Samokhvalovitchy by Dr. Loiko.

The sights in Belarus were magnificent! In particular, the old city of Pinsk, with its domed monasteries and the vast Pinsk Marshes surrounding the city evoked a certain

mysticism that we associate with Old Russia. That scenery will stick in our minds for a long time.

Estonia

The 3000 residents of Rapina, Estonia, see Russia any time they want. They drive down to the lake (Lake Pepsii) and the island 800 meters from shore is Russia. But that's close enough! The contrast between Russia and Estonia is one of the great ironies of the now-defunct Soviet Union. Estonia is ready to enter the European Union. Russia is still isolated and a political and economic mess. Rapina simply "lucked out" when they drew up the border.

Rapina is in the extreme eastern part of Estonia with a climate that is rather continental for the Baltics. A little more heat in the summer and a lot more cold in the winter than one normally associates with this area. Grapes that survive the winters in Rapina, have a good chance of surviving in southern Minnesota, and visa versa. Seven years ago, a Swedish businessman friend of Tom's appreciated the similarities and introduced Tom to Jaan Kivistik, a pomology instructor at the Rapina Agricultural College and enthusiastic grape grower and researcher. Jaan and his wife, Vaike, were our hosts for two days of activities in the Rapina area. Tom's lecture at the college on the subject of Minnesota grapegrowing drew a crowd of about 50 students and faculty, whom Jaan had clearly inspired with the joy of grapegrowing. They asked questions for nearly an hour! Jaan's unique grape collection had Baltic varieties and Minnesota varieties growing side-by-side. We were amazed at how some of the Baltic grapes could be ready to harvest while grapes like Beta were just beginning to color up. His most interesting variety is one called Varajane Sinine meaning Early Blue in Estonian. This native Estonian variety was pushing 20^{o}Brix when we saw it in Rapina on September 9th.

A billboard on the highway into the town of Poltsemaa announced, "Poltsemaa, the Wine Capital"! Wineries in Estonia? Yes, six to be exact, including the one in Poltsemaa whose production is about ten times the total commercial wine production of Minnesota. The wines, of course, are fruit wines, with black currant and apple being very popular. Many were finished sweet. But the trend in Estonia, as elsewhere, is toward drier wines, and so the wineries are beginning to produce more table wines from these fruits. Some we sampled were very well made.

We must mention the Polli Experiment Station near the south Estonia town of Karksi. Here we saw an orchard of 200 Mountain Ash trees. Polli has one of the largest and most diverse collections of these varieties in the Baltic region. The varieties were developed (successfully, it turns out) in the Soviet Union to produce edible fruit. We especially liked two for their sugar (up to 18.5 ^{o}Brix!), moderate acidity, complete lack of bitterness and nice citrus-like flavors. Just perfect for wine. We are not making this up!

Latvia

The Dishlers household in the old Hanseatic city of Riga, located on the Baltic Sea, was our home away from home during the trip. It was where we entered the Baltics on the 28th of August and where we departed for home on the 18th. In between our excursions

to Belarus, Estonia, and the Latvian hinterlands, we always returned to Riga. We got familiar enough with this city of nearly a million people that we could use its city bus system, navigate around by ourselves, and talk about our favorite restaurants and Latvian beers. Not all that easy in Riga, where the first language is Latvian and the second is Russian. English would not be third or fourth.

Our primary mission in Riga itself was to deliver a series of four seminars and lectures on winemaking and grape growing. We also delivered 3 + cases of Minnesota wine. But the lecture to the Latvian Genetics Society is the one that stands out. 50 people gathered about 80km from Riga at the Dobele Experiment Station for the event.. They were absolutely rabid with grapegrowing and winemaking enthusiasm, reminiscent of meetings in the early days of the MGGA. The Minnesota winetasting that followed the lecture was unforgettable for its level of camaraderie. More than anything, this session convinced us that grapegrowing has a good future in Latvia.

Between seminars and excursions away from Riga, we did a lot of winemaking. Together with Andris Dishlers, one of the leaders of the Latvian grape growers, we started wines from a wide variety of fruit, including black currants, apples, Mountain Ash, and, of course, several varieties of Baltic grapes that had never before been processed into wine. "We are making history!" Andris would say, as we crushed the next batch of fruit!

Special people? Lots of them. One of the goals of the trip was to establish some cooperation with Baltic and Belarusian grape breeders. So we made sure that our first excursion from Riga was to meet Andrash Fazekash, the leading grape breeder in Latvia and also poet and mechanical wizard. Andrash lives in the Latvian hinterland, 150km east of Riga near the village of Gulbenes. Summers there are cool and the winters are cold, not really grape country, one might think. The ideal place to breed grapes for the Baltics. If a selection ripens and survives in Gulbenes, it will do well anywhere in the Baltics. Andrash showed us his new selection named Vidzeme Skaistule that is absolutely the earliest ripening grape we saw on the whole trip.

Then there is former Riga TV personality, Gvido Dobelis, the president of the Latvian Grapegrowers Club and author of several books and many magazine articles on grapegrowing in cool climates. Gvido traveled everywhere with us and took on the role of our official advocate against lingering Soviet-style bureaucracy. We think that Gvido could talk a government bureaucrat into almost anything. It was really comforting having him with us during border crossings and customs negotiations! But, more than that, we came see how Gvido and Andris Dishlers are truly grapegrowing leaders in the Baltics.

Denmark

Our flight home connected through Copenhagen, so we stopped to see some Danish vineyards and visit with members of their growers association. We learned that the Danes now have excellent Danish wines to go with their Danish cheeses and lox!

Their association has grown to 250 members in only five years! They had just finished hosting a week-long Danish grape and wine promotional extravaganza befitting Madison

Avenue. It included special winetastings in every nursery store in Copenhagen ("Taste the wine. Buy the vine."), promotional posters for Danish grapes and wines, a special video production, and extensive television coverage featuring the King and Queen of Denmark drinking Danish wine, all paid for by the European Union! The young architect of this marketing gem? Michael Gundersen, one of the founders of the Danish Grapegrowers Association and a grapegrower in Copenhagen since he was 13 years old. (Michael still has his very first grapevine, which he showed us-- a 20 year old ëHimrodí growing at his parent's home.)

Association president, Peter Lorenzen, Michael Gundersen, and Vagn Hansen lead us on a tour of Danish vineyards around Copenhagen, where we were able to see some new cool climate grape varieties from Europe. These included Rondo, a red wine type from Geisenheim, Germany and Reform, a super early ripening white wine variety from Hungary. Both were of interest for their excellent set of fruit and comparatively good ripening during one of the worst seasons for rain and cold in Denmark in the last 50 years.

We wallowed in Danish hospitality throughout our weekend stay, as the Danes treated us to great food and drink, camaraderie and conversation.

Sweden

We grabbed the opportunity to visit Sweden and tour around Skane, Sweden's most famous fruitgrowing region, with Tom's oldest Baltic friend, Lennarth Jonsson. Malmo, Sweden is just a 45 minute ferry trip across the channel from Copenhagen. Lennarth had arranged for us to spend a day with Kimmo Rumpunen, at the Swedish University of Agricultural Sciences, Balsgard. Kimmo manages the Balsgard grape micropropagation project. They produce and sell 25,000 grapevines each year to commercial nurseries in Sweden for retail sales. Kimmo is, by far, the leading grape propagator in the Baltic region. He micropropagates and sells two of the Latvian grape varieties, Zilga and Supaga, and will likely add more varieties to that in years to come. Amateur grapegrowing is becoming popular in Sweden! Our Balsgard visit to see Swedish grapegrowing was novel enough to warrant TV coverage. Tom, Bob, and Kimmo all were featured in an episode of "The Green Room" a weekly horticulture program for Malmo TV that is broadcast throughout Sweden.

Grape Variety Evaluations

Criteria for Evaluation Grape Varieties

At each site we visited, grape selections and varieties were evaluated for ripeness and suitability for winemaking, as well as condition of the fruit (berry set and mildew). The following criteria for ripeness were used:

- Sugar content as degrees Brix (average of six berries)--fruits sufficiently ripe for making white wine typically have sugar content of greater than 18 Brix and for red wine greater than 20 Brix.

- Seed color--mature berries have seeds that are tan to brown in color

- Berry texture--ripe berries are relatively soft and yield to pressure

- Flavor development--fruity, varietal flavors develop as fruit approaches full maturity

- Sugar/acid balance--ripe fruit, suitable for winemaking, have sugar and acid in balanced proportions

Comparison to American varieties--Most of the sites visited had plantings of "early-ripening" American grape varieties. We were often able to directly compare the ripeness of Baltic and American varieties growing side-by -side. The American varieties typically included Beta, St. Croix, Joffre, and Foch. All of these varieties, normally considered early ripening by northern United States standards, were still green or barely colored during the period of our visits, and also suffered from poor fruit set under Baltic conditions. The ripe grape varieties of Baltic and Russian origins that we observed were literally weeks or even a month-plus ahead of these northern American standards.

Varieties of Special Interest to Cool Climate Growers
To our knowledge, none of these varieties has ever been described outside of the Baltic region or Belarus. Without the USDA support for this evaluation trip, these varieties would remain virtually unknown to the West, growing in obscure, isolated plantings in these countries. The most outstanding of these Baltic region grape varieties are described below in their approximate order of ripening.

Vidzeme Skaistule. A selection by Andrash Fazekash, a grape breeder working in the eastern Latvian province of Vidzeme. Vidzeme Skaistule is the earliest ripening grape variety observed on the trip. This year, Fazekash's site was extremely cool and wet, with grapevine growth lagging behind vines in Riga by nearly two weeks. So it is significant that on 29 August at Fazekash's vineyard near the village of Gulbenes, a sample of berries of this lavender colored grape measured 16-18^{o} Brix and had already developed a fruity, almost Gewurtztraminer-like flavor, with no foxiness. The fruit and vine were in perfect condition despite the unusually wet conditions. Vidzeme Skaistule has a rather small tight cluster of small berries that had set well in the cold wet bloom season this year. While it may not have commercial potential due to its small cluster, Vidzeme Skaistule should be of great interest to breeders whose goal is a variety that ripens under extremely cool, wet conditions. Also, even though it is the earliest to ripen in Fazekash's vineyard, it is not the first to push buds in the spring. It is about 4 days later than *Vitis riparia* under Latvian conditions. Andrash reports that this selection is fully hardy to at least -35 ^{o}C in Vidzeme.

Jubileinaja Novgoroda. Developed at the Central Genetic Laboratory in Michurinsk, Russia. We observed Jubileinaja Novgoroda on 8/31 in Minsk, on 9/3 in Pinsk in Belarus and at Rapina, Estonia on 9/9. Sugar content ranged from 18.5 to 22 ^{o}Brix, with well-developed flavors that can be described as "pineapple" or "tropical fruit". It was one of the few varieties that showed full maturity under Baltic and Belarusian conditions.

Jubileinaja Novgoroda produces a typical cluster of about 120 grams, with good set under cool wet conditions and good Botrytis resistance, i.e. it has commercial potential as variety, as well as high interest for breeding. The first experimental wine from Jubileinaja Novgoroda was produced this fall in Latvia. The variety is grown without winter protection in Minsk, Pinsk, and Rapina.

Muscat Melnika. A blue-skinned muscat variety developed at the Central Genetic Laboratory in Michurinsk, Russia. Observed on 9/1 in Minsk, Muscat Melnika had a sugar content around 19 ^{o}Brix, with muscat flavor just barely detectable. Seeds were white, indicating that the berries were still maturing. Unfortunately, we were not able to sample it again in mid-September, when the muscat flavor would have been more developed. This is an interesting variety for its ability to mature very early and its potential to produce a white muscat-flavored wine. Small to medium berries on a slightly loose, medium-sized cluster. Good fruit set despite the poor weather this year in Minsk. Grown with straw winter protection in Minsk.

Sirvinta. Lithuanian breeder, Roberts Galaitis, developed this red-skinned variety. We observed Sirvinta on 15 September growing in the vineyard of Evalds Pupols, in the southern Latvian province of Latgale, near the Lithuanian border. The sugar content of the berries sampled averaged 20.5 ^{o}Brix, and ranged up to 23 ^{o}Brix. Berries had well-developed fruit flavors, with no foxiness. The berries of Sirvinta are small and the cluster is small to medium in size, and normally, tight and winged. However, in 1998, the fruit set in Sirvinta was somewhat bothered by the extraordinarily wet conditions in Latvia and the clusters were a bit raggy. Sirvinta is an extremely early ripening variety that has good potential as breeding material, and also may be useful as a variety in itself. Sirvinta is grown with winter protection in Latvia.

Skujins 675. Skujins was a Latvian grape breeder who worked at the Tymiryazev Academy of Agriculture (TCXA) in Moscow. In Russia this selection has been named ìMoskovsky Ustojchivyîî. The Latvians prefer to call it Skujins 675. It is one of the earliest ripening and most promising of the varieties we evaluated for white wine potential. Sugar content in a sample of berries measured 18.5 ^{o}Brix on 9/3 in Pinsk, with a nice balance of sugar and acids, and pronounced fruit flavors, with no foxiness. On 9/13, a large sample of Skujins 675 berries were collected from a vineyard near Riga and crushed to use as a yeast starter. Sugar content of the sample measured 20 ^{o}Brix, and pH of 3.3, nearly perfect ripening for white wine production. This sample also had the characteristic pronounced fruity aromas and flavors. The berries of Skujins are small-medium in size and the moderately loose range from 90-120 grams. The vines we observed were extremely productive and had set well in poor weather this year. We believe that this variety has commercial potential for Baltic countries, as well as for certain cool season areas of the U.S., such as Maine, the Lake Superior Shore, and Puget Sound. A test lot of wine from Skujins 675 was produced in Latvia this fall. The vines of Skujins 675 are quite winter hardy and are grown without winter protection throughout the Baltics and Belarus.

Kosmonauts. Dr. Romuald Loiko, working at Samokhvalovitchy in Belarus, developed Kosmonauts as an early ripening table grape. When we observed Kosmonauts in Pinsk on 9/3 it had already reached 18-19 ^{o}Brix. The texture and flavor are very vinifera-like, perhaps a bit neutral. Berries are very large and the cluster is large and compact, reaching Ω kg or more. Berries are blue with clear juice and pulp. Kosmonauts is an interspecific hybrid, but rather tender to winter cold. It is grown with winter protection throughout Belarus. This is a really beautiful table grape that also could be used for white wine. It has many good traits to use in breeding to bring quality and extreme early ripening to the cross.

Agra. Working on a collective farm in the southeastern province of Latgale, Latvian grape breeder, Pauls Sukatnieks produced several extremely early ripening grape varieties, including this white selection, Agra. Observed in Minsk on 8/31, a berry sample from Agra measured 17-17.5 ^{o}Brix, with well-developed fruit flavors and no foxiness. Seeds already were tan in color. Observed at Pinsk (9/5), the sugar content averaged 19.5 ^{o}Brix, with a nice balance of sugar and acids. The berries of Agra are medium-large in size, but clusters are rather small, probably too small for commercial production. However, its extreme earliness and good chemistry make it interesting variety to use in further breeding. Agra begins to suffer winter injury at temperatures around -25 ^{o}C, so it is protected during the winter in Belarus and in some parts of the Baltics.

Veldze. Another white selection by Pauls Sukatnieks, Veldze was sampled on 9/15 at the Dobele Horticultural Plant Breeding Experiment Station in Latvia. Berries sampled at this site ranged from 16-20 ^{o}Brix in sugar content, with rich and pronounced flavor of tropical fruit (bananas, papayas). The fruit was not foxy. Veldze produces an attractive, slightly loose cluster, ranging from 100 to 130 grams. It is pistillate, so it may not be commercially viable, but it could be a valuable variety for further grape breeding. Veldze suffers winter injury at temperatures around -20 ^{o}C, so is typically protected during the winters in Latvia.

Meda. Also from Sukatnieks, Meda was evaluated at Dobele on 9/15. Sugar content averaged 20 ^{o}Brix. The berries had a rather mild fruity flavor flavor, without any hint of foxiness. Most of the berries in a typical cluster of Meda were seedless. Berries are small to medium in size. Clusters are medium and typically a bit loose, probably not sufficiently attractive to be a commercial table grape. However, Meda is worth a trial for wine production. Reported to be hardy to around -30 ^{o}C in the Baltics.

Sukribe. Sukatnieks' most impressive-looking white grape, with medium to large golden berries packed into a beautiful long, medium -large cluster. Sugar content was consistently around 18.5 ^{o}Brix wherever we sampled it. Sukribe is rather neutral in flavor, "hybrid", but without any foxiness, and with some hints of tropical fruit. The vine is extremely productive. Grown without winter protection in most of the Baltic region. It is probably hardy to -30 ^{o}C.

Reform. Developed in Hungary, Reform has been quite reliable in setting and ripening fruit in the Copenhagen area, including the cold wet year of 1998. Clusters are medium in size and slightly loose, with small to medium berries. The flavor and aroma are mild and rather neutral, absolutely not foxy. This is probably a blending grape. Reform would be tender in Minnesota, with hardiness about like Seyval.

Varajane Sinine. This is the only native Estonian variety observed during the trip. The name means ìEarly Blueî in Estonian. This is also the earliest ripening grape we observed in the Baltics and Belarus with good potential for red winemaking. The origins of Varajane Sinine are not known. There is speculation that it was propagated from a grape seedling growing on the Estonian island of Saarema in the Baltic Sea. Jaan Kivistik at the Rapina Agricultural College discovered this variety and has evaluated it for many years in Rapina. On 9/9 in Rapina, the sugar content of berries from Varajane Sinine ranged from 17 - 20.5 ^{o}Brix, with moderate acidity. Berries were rather soft and seeds were reddish turning brown. The berries of Varajane Sinine are small and the cluster small to medium (about 100 grams) and tight. It has some commercial potential as an extra early ripening variety and is of interest for breeding purposes. The first wine from Varajane Sinine was produced this fall in Latvia under our direction with fruit grown by Prof. Kivistik in Rapina. Varajane Sinine is grown without winter protection in Rapina, so it is potentially of sufficient hardiness to grow unprotected in some of the colder regions of the U.S. such as parts of Minnesota and Wisconsin.

Unnamed Novocherkask Selection. While evaluating grapes at Pinsk on 9/5, we were shown a *Vitis amurensis* x *Vitis vinifera* hybrid that had been obtained from the Plant Breeding Institute at Novocherkask, Russia. Unfortunately, the label had been lost, so its name was not known. Sugar content averaged 18.5 ^{o}Brix on a sample of berries. The flavor was a slight muscat, with some noticeable tannins in the skins. Clusters were medium in size, a bit loose and with small-medium blue-black berries. The staff at Pinsk had produced a wine sample from this selection last year and were sufficiently pleased to continue working with it as a red wine grape. It has been absolutely hardy at Pinsk. It may have some potential for unprotected growing in the colder regions of the U.S.

Zilga. The name 'Zilga' in Latvian is quite poetic, meaning something like "deep dark-blue waters". Zilga is the only blue selection ever released by Latvian breeder, Pauls Sukatnieks. Zilga was observed at numerous sites during the trip and with varying degrees of fruit maturity. Sugar content of berry samples ranged from 15.5 ^{o}Brix on 9/15 at Dobele, Latvia to 17 ^{o}Brix on 9/9 in Rapina, Estonia, and 18 ^{o}Brix on 9/16 at Evalds Pupols vineyard in Latgale, Latvia. These Zilga vines at Mr. Pupols are an interesting case. While the sugar content was only 18 ^{o}Brix, the fruit was very ripe to the taste, with Zilgaís characteristic bilberry-like flavor. Acidity was rather low and the berries quite soft. Two to three meters of cane was hardened off on these vines, and their leaves were already showing red fall color. They had the look of vines that were shutting down for the winter. Berries of Zilga are small (1.7g), blue with sky-blue shading. Clusters are small- medium in size, on average around 90 grams, tightly formed and winged. The vine is very vigorous and productive, setting fruit very well even during this cool wet Latvian summer. The Latvian growers are eagerly working to explore Zilgaís wine potential. Test

lots of wine were produced in two different styles this fall in Latvia. Among all Sukatnieksí selections, `Zilga' is the most hardy, having survived winters of to -40 ^{o}C in Belarus. Its productivity and extreme cold hardiness suggest that Zilga may have some commercial potential in the Baltics, Belarus, and the cold winter regions of the U.S.

Importing These Grape Varieties

Since these grape varieties have appeal across a wide area in North America, the USDA is extremely interested in supporting their importation. In 1997, Zilga and Skujins 675 were imported into the virus-testing program at Geneva, New York. They will probably be available in North America sometime in 2002. For those interested in using any the above varieties in breeding, pollen can be freely shipped into the U.S. without quarantine, as can seed. Check with Tom about arrangements.

Acknowledgments

The authors wish to thank the USDA Foreign Agriculture Service for their grant of funds, which really got this exploration trip underway. Also, thanks to the Minnesota Grape Growers Association for their financial support. Throughout the trip, our traveling companions, Gvido Dobelis and Andris Dishlers, from the Latvian Grape Growers Club, were outstanding in their support. Their multilingual and multicultural skills kept us out of trouble everywhere (no mean feat!). Our debt to them is huge. In Estonia, Rapina college professor and northern grape enthusiast extraordinaire, Jaan Kivistik and his wife Vaike were wonderful hosts, as were our nurseryman friend Peeter Viikholm in Tallinn and grape breeder Harri Poom in Vandra. We have fond memories of the Estonian countryside thanks to them. In Belarus, our great friend and colleague, Dr. Romuald Loiko, from the Belarusian Fruit Research Institute arranged an itinerary for us that left nothing undone. He dealt with the Belarusian authorities on our behalf, and made sure we got to see some magnificent local sights (other than grapes!). Our week in Belarus is forever imprinted in our minds. Our time in Copenhagen was short, but intensely memorable thanks to the kindness of the Danish Grape Growers Association and Peter Lorenzen, Michael Gundersen, and Vagn Hansen. Our good friend, Lennarth Jonsson from Karlskrona, Sweden arranged a whirlwind tour of the Skane fruitgrowing region in the south of Sweden that included a TV appearance to plug grapegrowing in cold climates. Well done everyone, and a thousand thanks! (We can hardly wait to go back!) Here's to our old, as well as newfound relationships living on for years to come. May we benefit on both sides of the Atlantic and grow as a result.
Peace. TP, RP.

Table 1. Heat accumulation (^{o}Centigrade, Base 10^{o}C) for the Baltics, Belarus, St. Paul, and other winegrowing areas.