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**Pomegranates: Interesting
Selections in the USDA -
ARS Davis, National Clonal
Germplasm Repository
Collection**

Topics of Discussion

- **What is the NCGR?**
- **Repository Services**
- **Overview of the collection at the USDA, ARS Davis, NCGR**

Fruiting types

Ornamental types

- **Questions**

Davis, National Clonal Germplasm Repository (NCGR)

- **One of 32 federally funded repositories in the National Plant Germplasm System (NPGS)**
- **Mission: Acquire, Conserve, Evaluate and Distribute crop species assigned to the NCGR**
- **Seed vs. Clonal**
- **Field and containerized collections**

Repository Services

Germplasm Distribution



Pomegranate Shipments Over 14 Years

• 1996	9 accessions,	1 order
• 1997	43 accessions,	7 orders
• 1998	40 accessions,	8 orders
• 1999	25 accessions,	7 orders
• 2000	60 accessions,	9 orders
• 2001	81 accessions,	14 orders
• 2002	50 accessions,	13 orders
• 2003	116 accessions,	19 orders
• 2004	782 accessions,	336 orders
• 2005	263 accessions,	42 orders
• 2006	398 accessions,	73 orders
• 2007	763 accessions,	102 orders
• 2008	1169 accessions,	117 orders
• 2009	1279 accessions,	124 orders

Pomegranate Tasting

November 8th 2008

Preparation of Pomegranates for Tasting



Pomegranate Field Day



Genetic Evaluation

NCGR pomegranate accessions used in screen of microsatellite DNA markers

<u>Accession</u>	<u>Cultivar</u>	<u>Origin</u>
DPUN 007	Haku-botan	Japan
DPUN 008	Haku-taka	Japan
DPUN 013	Sverkhramniy	Turkmenistan
DPUN 014	Molla Nepes	Turkmenistan
DPUN 015	Parfianka	Turkmenistan
DPUN 051	Golden Globe	United States
DPUN 052	Green Globe	United States
DPUN 056	Purple Heart	United States
DPUN 070	Bala Miursal	Russia
DPUN 072	Apseronski	Russia
DPUN 073	Kazake	Russia
DPUN 076	Alk Pust Ghermez Saveh	Iran
DPUN 079	Entek habi saveh	Iran
DPUN 081	Wonderful	United States
DPUN 093	Palermo	Italy
DPUN 096	Mahali Dezful	Iran

Progress of pomegranate microsatellite DNA marker screen

- Total # of Markers screened: 34
- # markers successfully amplified in PCR: 21
(62% of total)
- # markers Monomorphic*: 4
(19% of amplified markers)
- # markers Polymorphic: 17
(81% of amplified markers)

Overview of the Pomegranate Collection

Aril Characteristics



DPUN 0007 'Haku Botan'



DPUN 0082 'Sin Pepe'



DPUN 0107 'Gissarskii Rozovyi'



DPUN 0056 'Purple Heart'

Fruit Development of DPUN 0015 'Parfianka'

Male and Female Flowers



Male and Female Flowers



Male and Female Flowers - Split

















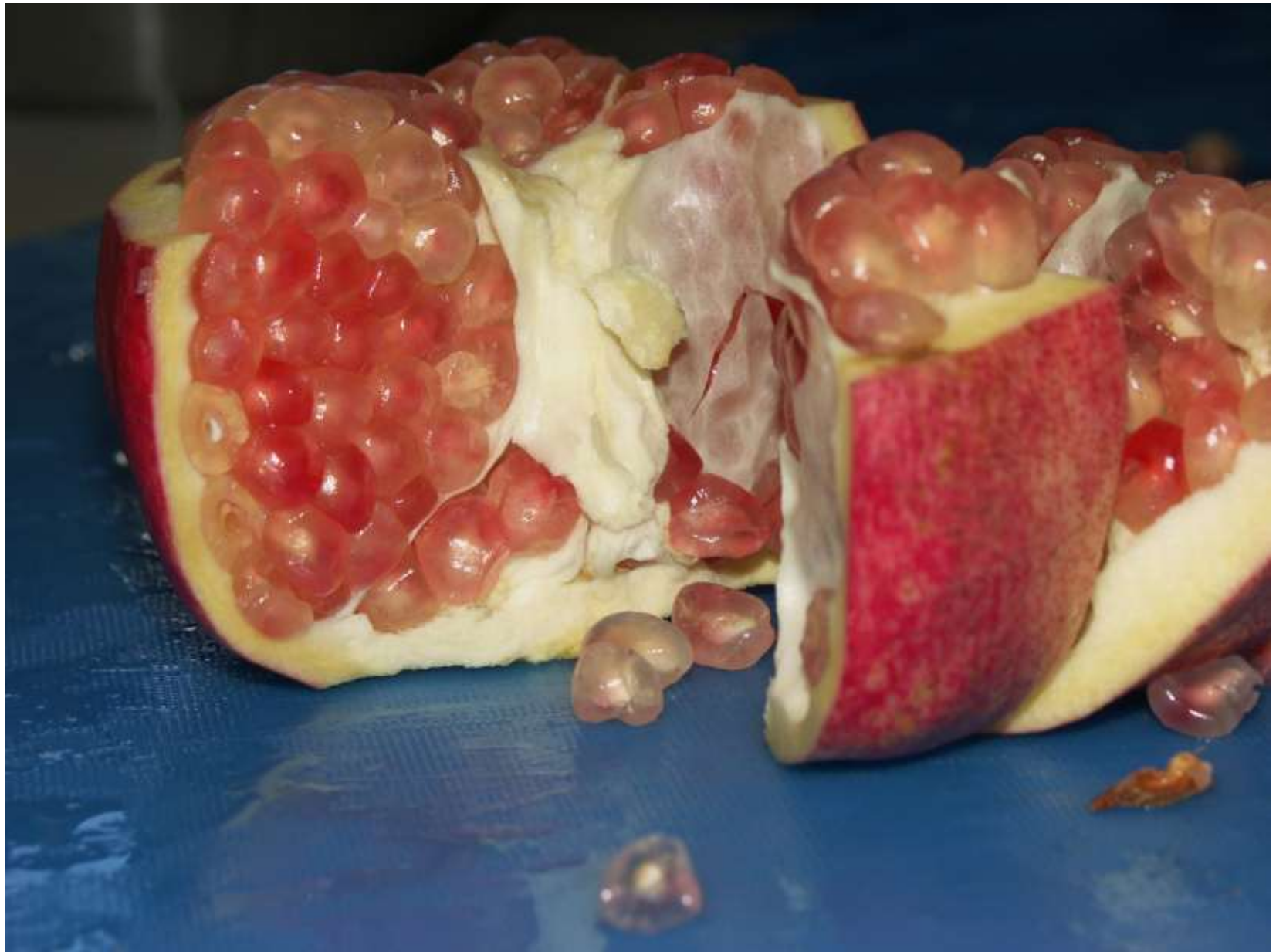
Soft Seeded Types

DPUN 0082 'Sin Pepe'



- This variety originally came to the Davis repository from the Chico, California plant introduction station. It also goes by the names “Pink Ice” and “Pink Satin”.
- This is a sweet type with medium sized fruit, pink speckled rind, medium sized light pink to rose colored arils, with extremely soft seeds. Good for fresh eating, with sweet mild fruit flavor that is best if fruit are left on the tree until October even though they are ripe earlier.
- Fruit harvested on October 10th, 2006 had Brix = 16.5, TA = 0.3% (tartaric acid).







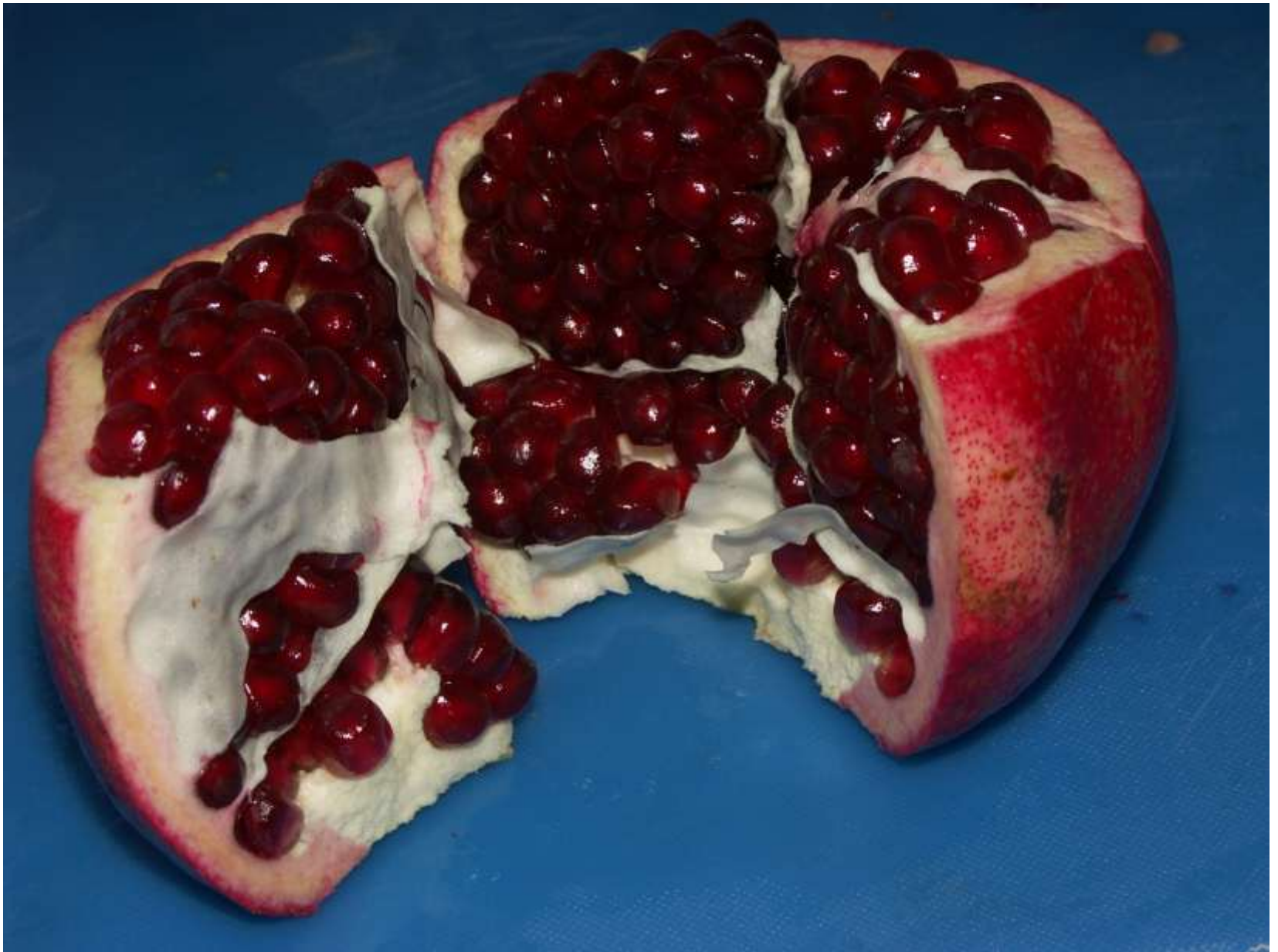
DPUN 0109 ‘Medovyi Vahsha’



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala. Its name means “honey”.
- It is a sweet type with medium sized fruit, pink/red rind, medium sized dark red arils, with extremely soft seeds. Very productive tree. Good for fresh eating, with a sweet mild fruit flavor. It is particularly desirable due to its combination of being sweet, soft seeded and pink/red.









DPUN 0134 'Myatadzhy'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala.
- It is a sweet type with medium sized fruit, red rind, medium sized dark red arils, with extremely soft seeds. Good for fresh eating, with a sweet mild fruit flavor. It is particularly desirable due to its combination of being sweet, soft seeded and red.





DPUN 0151 'Sirenevyi'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala.
- This is a sweet type with medium to large sized fruit, with tan, blushed in pink rind, medium sized dark red arils, with soft seeds. It is a late variety that is good in October but best in flavor and color in early November. It is excellent for fresh eating with a complex flavor. It has done very well at taste tests.
- Fruit harvested on October 28th, 2008 had Brix = 15.2, TA = 0.22% (citric acid).









DPUN 0015 'Parfianka'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala. Levin named this variety based on the name of the ancient oriental empire, Parfijia, located where Garrygala now stands.
- It is a sweet-tart type, with medium to large sized fruit, red rind, medium large sized dark red arils, with very soft seeds. It has an excellent balance of flavor. It has consistently done very well at taste tests and is excellent for fresh eating or juice.
- Fruit harvested on October 21st, 2008 had Brix = 15.23, TA = 1..04% (citric acid).









DPUN 0107 'Gissarskii Rozovyi'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala
- It is a sweet-tart type, with good balanced flavor and medium to large sized fruit. Pink and yellow rind with medium large arils and soft seeds.





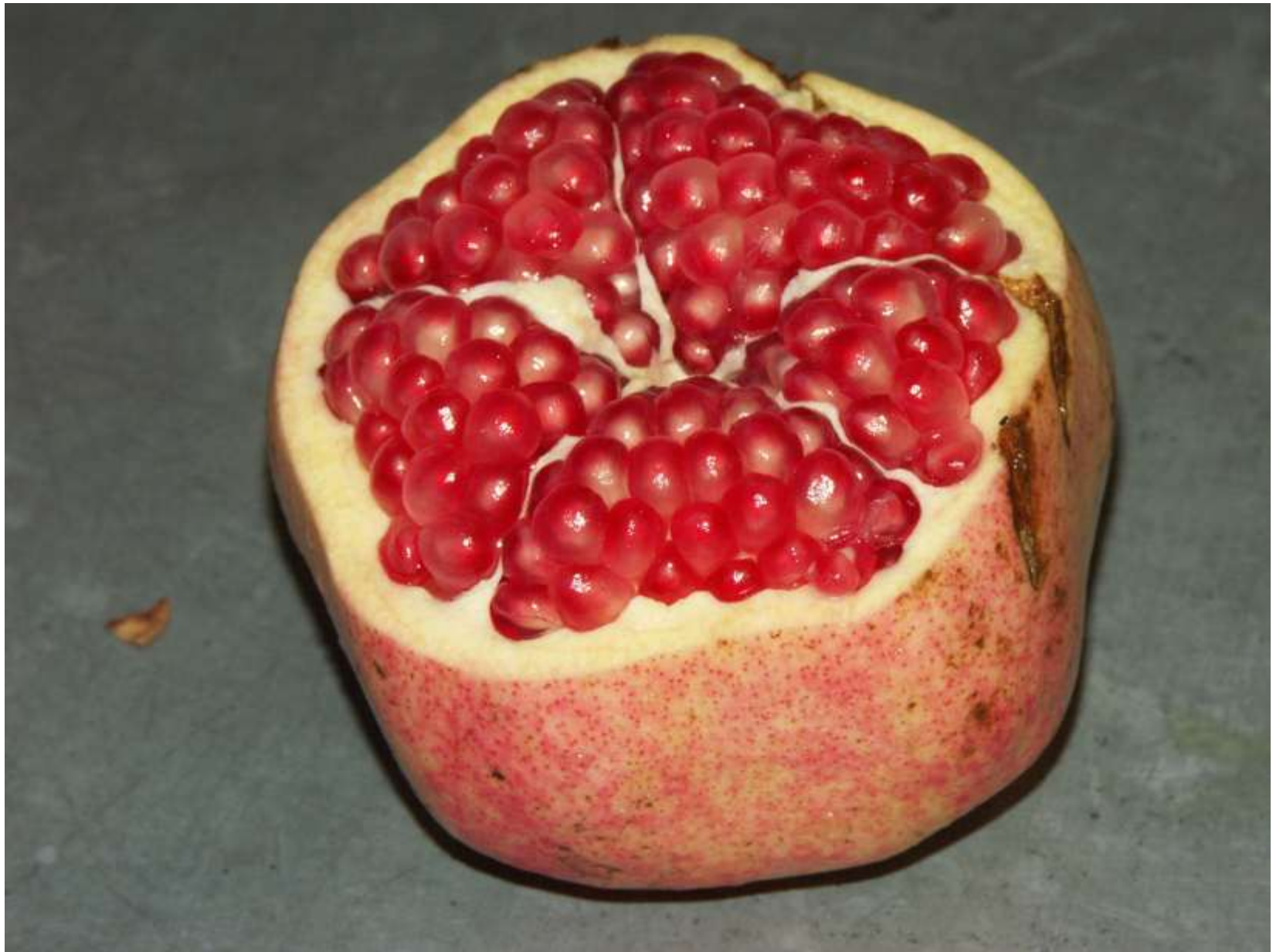
DPUN 0139

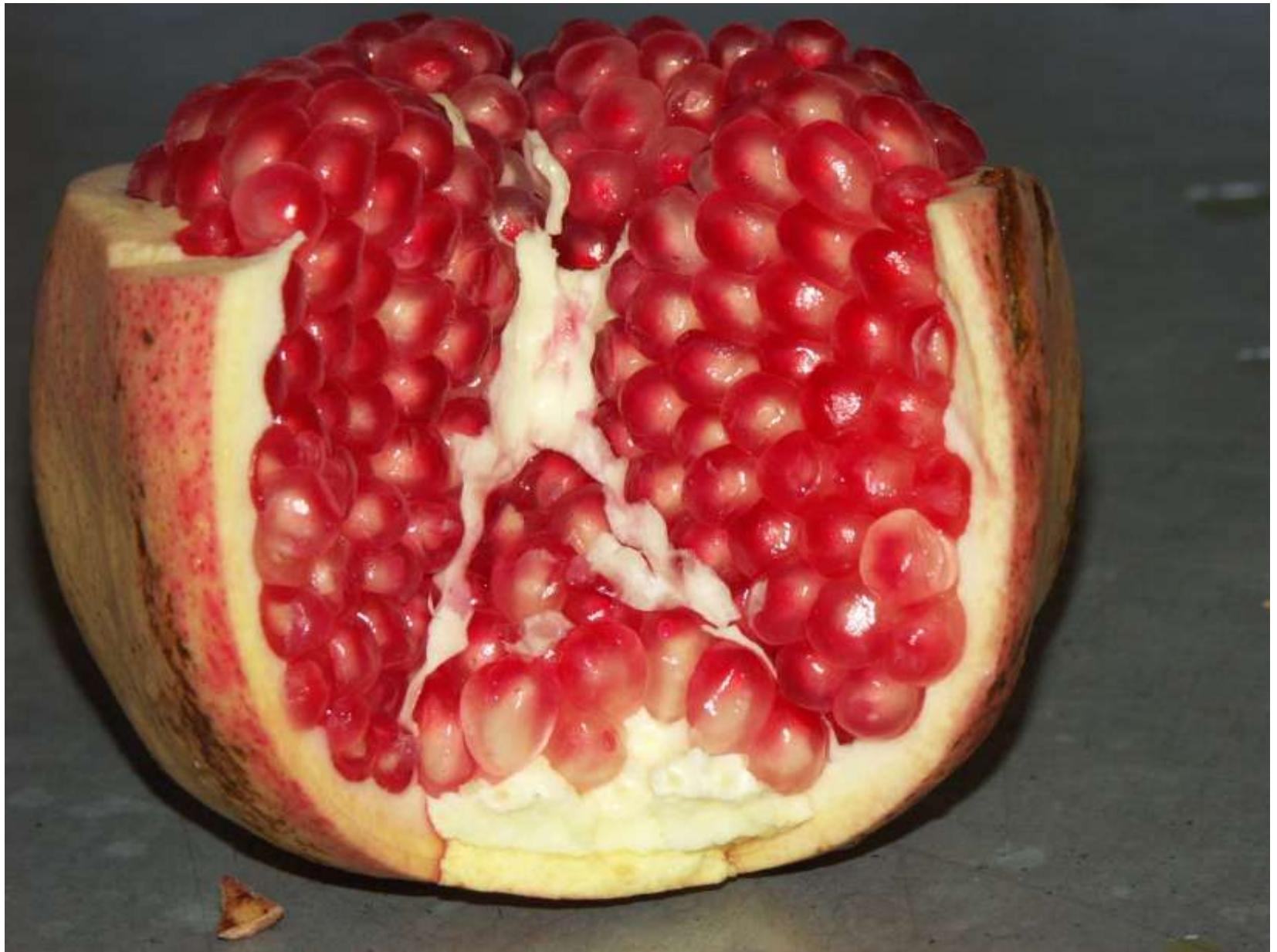
‘Myagkosemyannyi Rosovyi’



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala
- It is a sweet-Tart type, with good flavor and medium to large sized fruit. Pink and yellow rind with medium large arils and soft seeds. Citrus flavored (grapefruit).









DPUN 0125 'Ariana'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala
- It is a sweet-Tart type, with great flavor and medium to large sized fruit. Red rind with dark red arils and very soft seeds.
- Produced very large, balanced flavored fruit in 2008. Top performer in 2008 (very hot fall).







DPUN 0128 'Molla Nepes'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala
- It is a sweet-Tart type, with great flavor and medium to large sized fruit. Red rind with dark red arils and very soft seeds.



2
TREE
RIPENED

ORANGE
T. 25 LBS./POIDS NE







**Medium Soft to Medium
Seeds**

**“Twener” Types
Fresh Eating or Juice**

DPUN 0081 'Wonderful'



- California industry standard variety.
- It is a sweet-tart type with medium to large sized fruit, red rind, medium sized dark red arils, medium soft seeds and a definite astringency giving it a wine like character. It has excellent flavor and color. It is good for fresh eating and for juice.







DPUN 0056 'Purple Heart'



- It is a sweet to sweet-tart type with medium to large fruit, red rind, medium to large sized dark red arils, and medium soft to medium seeds. It has good fruit flavor and color. It is good fresh eating and for juice.
- Minimal splitting and excellent holding ability off the tree.
- Fruit harvested October 28th, 2008 had Brix = 15.8, TA = .92% (citric acid).









DPUN 0167 'Ink'



- This variety originally came to the Davis repository from the Chico, California plant introduction station. It is from our “old block”.
- It is a sweet-tart type with medium to large sized fruit, dark red rind, medium sized arils, with medium seeds. Good flavor.
- Shared best pomegranate rating in 2008 with 'Ariana'







DPUN 0066 ‘Kara Bala Miursal’



- This accession came to the Davis repository from the USDA/ARS Southeastern Fruit and Tree Nut Research Lab in Byron, Georgia from Michael Hothchkiss. Originally from Azerbaijan.
- This is a sweet-tart type with medium to large fruit, speckled pink/red rind, medium-large sized dark red arils, with medium seeds that “pop” when you chew them. Good fresh eating with jam like flavor but probably best for juice due to harder seed.

Medium Hard to Hard Seeds

Juice Types

DPUN 0067 'Nikitski Ranni'



- This accession came to the Davis repository from the USDA/ARS Southeastern Fruit and Tree Nut Research Lab in Byron, Georgia from Michael Hothchkiss. Originally from Azerbaijan or Turkmenistan.
- This is a sweet-tart type with large fruit, red rind, medium to large size red arils, and hard seeds. It has good fruit flavor and excellent color. This variety is very productive and is best suited to juice. Appeared to be quite productive in Tifton, Georgia.









DPUN 0059 'Sakerdze'



- This accession came to the Davis repository from the USDA/ARS Southeastern Fruit and Tree Nut Research Lab in Byron, Georgia from Michael Hothchkiss. Originally from Georgia.
- It is a sweet-tart to tart type with medium to large fruit, red rind, medium to large sized dark red arils, and hard seeds. It has good fruit flavor and color and seems to be quite productive. Good for juice.

DPUN 0060 ‘Al Sirin Nar’



- This accession came to the Davis repository from the USDA/ARS Southeastern Fruit and Tree Nut Research Lab in Byron, Georgia from Michael Hothchkiss. Originally from Azerbaijan or Turkmenistan.
- This is a sweet-tart type with large fruit, red rind, large sized dark red arils, and very hard seeds. It has good fruit flavor with citrus/floral notes and excellent color. This variety is very productive from a young age and is best suited to juice.

DPUN 0155 'Kara Gul'



- This variety came from Dr. Gregory Levin when he was stationed at the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala
- It is a sweet-Tart type, with good flavor and medium to large sized fruit. Dark red rind with dark red arils and medium hard seeds.
- Darkest variety in collection. Name means dark red / black flower.









Spice Type

DPUN 0027 'Daru'



- This variety came to us from Todd Kennedy in 1996. It is native to western Himalayas.
- Small, tart fruit with yellowish/green covered with red rind. Small dark red to pinkish white arils.
- Used for making the spice anardana.

Ornamental Varieties



DPUN 0007 'Haku Botan'



DPUN 0009 'Ki Zakuro'



DPUN 0017 'Dotch Legrelley'



DPUN 0011 'Toryu Shibori'

DPUN 0001
‘Double Red White’

Came into the collection pre 1990

DPUN 0001 'Double Red White'



DPUN 0009 'Ki Zakuro'

This accession was collected by the National Arboretum from the Shibamichi Nursery in Saitama, Japan in November of 1985. The Davis, NCGR received this accession June of 1990.

DPUN 0009 'Ki Zakuro'



DPUN 0011 'Toryu Shibori'

This accession was collected by the National Arboretum from the Shibamichi Nursery in Saitama, Japan in November of 1985. The Davis, NCGR received this accession June of 1990.

DPUN 0011 'Toryu Shibori'





DPUN 0010 'Nochi Shibori'

This accession was collected by the National Arboretum from the Shibamichi Nursery in Saitama, Japan in November of 1985. The Davis, NCGR received this accession June of 1990.

DPUN 0010 'Nochi Shibori'



DPUN 0007 'Haku Botan'



- This variety came from Shibamichi Nursery in Saitama, Japan. It is grown primarily for its highly ornamental double white flowers.
- It is an extremely tart type, with medium to large sized fruit, yellow rind, medium sized clear to yellow tinted arils, with hard seeds. It is bracingly tart but mellows after some time in the refrigerator. Its flavor is lemon-like with a hint of "pineapple lifesaver". It is good in a juice blend when more acidity is desired.
- Fruit harvested on October 21st, 2008 had Brix = 15.7, TA = 2.09 (citric acid).

DPUN 0007 'Haku Botan'











DPUN 0017 ‘Dotch Legrelley’

This accession was collected September of 1995 by Dr. George White and Dr. Dan Parfitt from the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala. It was developed and selected prior to 1995 in Azerbaijan by A.D. Strebkova.

DPUN 0017 'Dotch Legrelley'







WEO 42

This tree is part of the “old block” of pomegranates west of the vineyard at the Wolfskill Experimental Orchard. This tree originally came from the Chico, CA Plant Introductory Station.



WEO 42



WEO 42



DPUN 0019

‘(C)Hydranar X Kirmizy Kabuh’

This accession was collected September of 1995 by Dr. George White and Dr. Dan Parfitt from the Turkmenistan Experimental Station of Plant Genetic Resources, Garrygala. It was developed and selected prior to 1995 in Baku, Azerbaijan. The tree is semi-dwarf (1 – 2m tall) and is the result of a cross between mutant of American dwarf Chico X Kirmizy-Kabuh.

DPUN 0019 ‘(C)Hydranar X Kirmizy Kabuh’





