**Table S1** List of 115 seedlings used. In most cases, identity of pollen parent was unknown (OP: open-pollinated).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Seedling | Seed parent | Pollen parent | Country of origin\* | Species |
| 380 | 10-01 | OP | Kazakhstan | *M. sieversii* |
| 381 | 12-01  | OP | Kazakhstan  | *M. sieversii* |
| 382 | 13-01 | OP | Kazakhstan | *M. sieversii* |
| 383 | 16-01 | OP | Kazakhstan  | *M. sieversii* |
| 384 | 24-01 | OP | Kazakhstan | *M. sieversii* |
| 386 | N/A | OP | Kazakhstan  | *M. sieversii* |
| 387 | N/A | OP | Kazakhstan | *M. sieversii* |
| 425 | Russian # 12740-7A | OP | Russia | *M. sieversii* |
| 488 | 02-01 | OP | Kazakhstan | *M. sieversii* |
| 490 | 04-01 | OP | Kazakhstan  | *M. sieversii* |
| 491 | 04-02 | OP | Kazakhstan | *M. sieversii* |
| 492 | 09-02 | OP | Kazakhstan  | *M. sieversii* |
| 494 | 11-01  | OP | Kazakhstan | *M. sieversii* |
| 496 | 12-02 | OP | Kazakhstan  | *M. sieversii* |
| 499 | 31-06 | OP | Kazakhstan | *M. sieversii* |
| 500 | 41-04 | OP | Kazakhstan | *M. sieversii* |
| 354 | Solncedar | OP | Russia | *M. domestica* |
| 374 | Korichnoe Polosatoje | OP | Russia | *M. domestica* |
| 377 | Uralian Winter apple | OP | Russia | *M. domestica* |
| 395 | Ben Davis | OP | USA | *M. domestica* |
| 422 | Rossoshanskoje Polosatoj | OP | Russia | *M. domestica* |
| 429 | Szampanska | OP | Russia | *M. domestica* |
| 457 | Bashkirian Beauty | OP | Russia | *M. domestica* |
| 477 | Longfield | OP | Russia | *M. domestica* |
| 478 | Longfield | OP | Russia | *M. domestica* |
| 485 | Uralian Winter apple | OP | Russia | *M. domestica* |
| 359 | Transparente de Croncels | Saint Germain | France | *M. domestica* |
| 367 | Pepino Jaune | OP | France | *M. domestica* |
| 371 | Cremiere | OP | France | *M. domestica* |
| 378 | Violette | OP | France | *M. domestica* |
| 388 | Gloire de Ponchartrain | Bruyére | France | *M. domestica* |
| 398 | Cinq cotes | OP | France | *M. domestica* |
| 399 | Crâvert | OP | France | *M. domestica* |
| 401 | Cassou | OP | France | *M. domestica* |
| 404 | Faros | OP | France | *M. domestica* |
| 405 | Fer (Pomme fer) | OP | France | *M. domestica* |
| 412 | Muscadet de Dieppe | OP | France | *M. domestica* |
| 416 | Pigeonnet Rouge | OP | France | *M. domestica* |
| 419 | Reinette Doree | OP | France | *M. domestica* |
| 420 | Reinette Franche | OP | France | *M. domestica* |
| 424 | Rubin | OP | France | *M. domestica* |
| 437 | Aromat de Vara  | OP | Russia | *M. domestica* |
| 448 | Reinette Franche | OP | France | *M. domestica* |
| 459 | Binet Blanc Dore | OP | France | *M. domestica* |
| 461 | Court Pendu Doux | OP | France | *M. domestica* |
| 462 | Court Pendu de France | OP | France | *M. domestica* |
| 463 | Court Pendu de France | OP | France | *M. domestica* |
| 465 | Court Pendu Rose | OP | France | *M. domestica* |
| 466 | Court Pendu Rose | OP | France | *M. domestica* |
| 470 | Fenouillet Gris | OP | France | *M. domestica* |
| 472 | Frequin Rouge Amer | OP | France | *M. domestica* |
| 483 | Reinette Douce | OP | France | *M. domestica* |
| 486 | Violette | OP | France | *M. domestica* |
| 402 | Dijkmanzoet | OP | Netherlands | *M. domestica* |
| 403 | Echtelds Zoet | OP | Netherlands | *M. domestica* |
| 406 | Groninger Kroon | OP | Netherlands | *M. domestica* |
| 407 | Groninger Peppeling | OP | Netherlands | *M. domestica* |
| 410 | Hvezdnata Reneta | OP | Netherlands | *M. domestica* |
| 426 | Schellinkhouter | OP | Netherlands | *M. domestica* |
| 443 | Hornokrajske Malinove | OP | Netherlands | *M. domestica* |
| 353 | Ingrid Marie | OP | Denmark | *M. domestica* |
| 358 | Nonnetit Bastard | Bruyére | Denmark | *M. domestica* |
| 409 | Guldborg | OP | Denmark | *M. domestica* |
| 411 | Molleskov | OP | Denmark | *M. domestica* |
| 414 | Pederstrup | OP | Denmark | *M. domestica* |
| 417 | Princess äpple | OP | Sweden | *M. domestica* |
| 423 | Rött Melonäpple | OP | Sweden | *M. domestica* |
| 361 | Beachamwell | OP | UK | *M. domestica* |
| 365 | Lemon Pippin | OP | UK | *M. domestica* |
| 368 | Wyken Pippin | OP | UK | *M. domestica* |
| 372 | Emneth Early | OP | UK | *M. domestica* |
| 373 | Gladstone | OP | UK | *M. domestica* |
| 375 | Lord Derby | OP | UK | *M. domestica* |
| 379 | White Paradise | OP | UK | *M. domestica* |
| 389 | Joybells | Beacon | UK | *M. domestica* |
| 390 | Mother | Joybells | UK | *M. domestica* |
| 391 | Mother | Joybells | UK | *M. domestica* |
| 392 | Mother | Joybells | UK | *M. domestica* |
| 433 | Beauty of Bath | Clochard | UK | *M. domestica* |
| 434 | Merton Russet | Brohovels | UK | *M. domestica* |
| 444 | Lemon Pippin | OP | UK | *M. domestica* |
| 449 | Scilly Pearl | OP | UK | *M. domestica* |
| 467 | Early Almond | Worcester Pearmain | UK | *M. domestica* |
| 468 | Edward VII | OP | UK | *M. domestica* |
| 476 | London Pippin | OP | UK | *M. domestica* |
| 484 | Rosemary Russet | OP | UK | *M. domestica* |
| 487 | White Paradise | OP | UK | *M. domestica* |
| 350 | Arkansas Black | OP | USA | *M. domestica* |
| 351 | Belle Fleur Jaune | OP | USA | *M. domestica* |
| 357 | White Pippin | OP | USA | *M. domestica* |
| 362 | Champlain | OP | USA | *M. domestica* |
| 376 | Mildew immune seedling | OP | USA | *M. domestica* |
| 385 | Commercio | OP | USA | *M. domestica* |
| 397 | Chehalis | OP | USA | *M. domestica* |
| 400 | David | OP | USA | *M. domestica* |
| 413 | Peck's Pleasant | OP | USA | *M. domestica* |
| 418 | Redfield | OP | USA | *M. domestica* |
| 421 | Roman Stem | OP | USA | *M. domestica* |
| 450 | Selena | OP | USA | *M. domestica* |
| 451 | Selena | OP | USA | *M. domestica* |
| 454 | Yellow Bellflower | OP | USA | *M. domestica* |
| 458 | Beacon | Melba | USA | *M. domestica* |
| 460 | Blanchard | OP | USA | *M. domestica* |
| 479 | Mildew immune seedling | OP | USA | *M. domestica* |
| 480 | Northwest Greening | OP | USA | *M. domestica* |
| 481 | Northwest Greening | OP | USA | *M. domestica* |
| 482 | Red Baron | Early Golden Hawaii | USA | *M. domestica* |
| 509 | Red Thorle | Benoni | USA | *M. domestica* |
| 352 | Druivenzuur | OP | Netherlands | *M. domestica* |
| 360 | André Briollay  | OP | France | *M. domestica* |
| 364 | D'Arcy Spice | OP | UK | *M. domestica* |
| 441 | Fenouillet Rouge | OP | France | *M. domestica* |
| 455 | Zelenovka Sotchnaya | OP | Russia | *M. domestica* |
| 475 | Krapchatoe No. 1448 | OP | Russia | *M. domestica* |

\*‘Country of origin’ refers to the seed source, so a cultivar itself may not have originated in the country where we sourced seed from.