



When Vitalis Organic Seeds first entered the organic produce market in 1994, we were motivated by a passion to become leaders in breeding varieties adapted to organic agriculture systems, as well as providing the highest quality organic seed. Today we develop and produce more than 150 certified organic and regionally adapted varieties of vegetables and culinary herbs for the North American market. To mark our achievements, we hosted a 25th anniversary celebration at our research station in San Juan Bautista, CA this past August, with more than 200 growers, shippers, dealers, breeders and certifiers in attendance.



In her opening remarks, Vitalis North America Business Manager Erica Renaud explained our philosophy: “At Vitalis, our organic seed is a natural complement to organic production techniques that work with biological systems such as crop rotation, intercropping, organic fertilization, natural pest control and mechanical cultivation for weed control. Conventionally produced seed, based on subjection to chemically based inputs, cannot be used to accomplish the goals of organic agriculture.”

While we are proud of the dedication that has brought us to where we are today – global leaders in organic seed production and variety development – we have no intention of resting on our laurels. Providing the highest quality organic seed of vegetables and herbs that are best adapted to our warming and increasingly unpredictable climate, to new and innovative organic production practices, and to evolving consumer trends demands our on-going attention. The challenges we are facing in agriculture are increasing, but so too is our ability at Vitalis Organic Seeds to address these challenges with new and innovative solutions. We are excited about the new products we have to offer in 2020, and invite you to join us in our commitment to create an organic world together.

Thank you for choosing Vitalis Organic Seeds.



Introducing 2020 New Varieties



**Tundra
Spinach**



**Placepack
Bell Pepper**



**Brocanto
Bell Pepper**



**Ocelot
Bell Pepper**



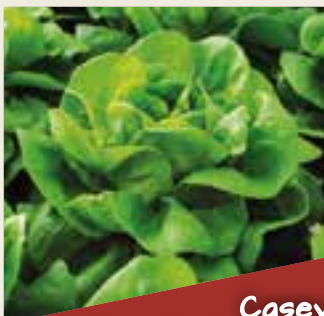
**Sabour
Bell Pepper**



**Oslo
Leek**



**Originale
Bell Pepper**



**Casey
Green Butterhead**



**Marciano
Red Butterhead**



**Mexicana
Zucchini**

See inside for more details!

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Organic Certification

All of our seed, seed processing and seed treatments are 100% certified organic complying to national and international standards. Vitalis Organic Seeds organic certificates and non-GMO statement can be found on the About Vitalis page of our website www.vitalisorganic.com.



USDA NOP

We are certified as a handler for the National Organic Program (NOP) of the United States Department of Agriculture (USDA) with certifier CCOF under Client Code pr1831. We are enrolled in the CCOF Global Market Access Program in compliance with the NOP/COR (Canada Organic Regime) Equivalence Arrangement and the US/EU Equivalence Arrangement.



EKO

For the European and other select international markets our vegetable seeds are certified in compliance with EC No 834/2007 Regulation by Skal under number 017981.



Lacon

For the European and other select international markets our herb seeds are certified in compliance with the EC No 834/2007 Regulation by Lacon under certificate number DE-RP-003-00029-BCD#2016#55761-EN.



Lettuce



Dillon

Iceberg

Dillon

An iceberg with excellent uniformity and small head size, Dillon has strong internal structure and fill. The exterior frame and wrap leaves have small ribs, and stand out for their dark green color. Head size and weight will increase in hot weather, performing best in late summer and early fall. Excellent resistance to downy mildew.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/Pb.



Barilla

Green Butterhead

Barilla

Barilla is a medium green, thick-leaved variety with a strong base, upright shape and good volume. It is strong against internal tipburn. Barilla is appropriate for late spring and early fall crops in most locations and can be grown in summer in coastal regions.

Resistances: HR: Bl:16-27,29,32,34,36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.



Milagro

Milagro

Milagro is a medium green butterhead with nice leaf gloss, a large frame and impressive weight that is ideal for processing and carton packs. With good flexibility for full season production and improved mildew resistance, Milagro offers solid performance for multiple applications.

Resistances: HR: Bl:16-35EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Mirlo

Mirlo

A voluminous bright green butterhead with glossy leaves, a well-filled heart and a flat base. Mirlo has medium weight, is easy to peel and very strong against internal tipburn. Broad adaptability with excellent performance throughout the season.

Resistances: HR: Bl:16-28,30-32EU/1-9US/Nr:0/Pb/TBSV. | IR: LMV:1.

Red Butterhead

Alkindus

Alkindus has slightly savoyed leaves and excellent downy mildew and red aphid resistance. With a medium head size, Alkindus has a beautiful dark red color and is suitable for full season production. Excellent fill and good field holding capacity.

Resistances: HR: Bl:16-26,28,32EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Alkindus

Marciano *new!*

Our newest red butterhead has been a standout in trials thanks to its impressive disease package, especially downy mildew resistance. Marciano is a more compact variety with good internal fill. Outer leaves are smooth, with an eye-catching deep burgundy red color, and contrast beautifully with the fresh green interior.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Marciano

Roxy

An outstanding red butterhead variety due to its brilliant leaf color and field performance. Roxy has an open, loose head with delicate leaves that are slightly blistered. This variety offers a nice base and strong tipburn tolerance, and is slow to bolt.

Resistances: HR: Bl:16,21,23,32EU/1-6US.



Roxy

Lettuce

Greenleaf

Bergam's Green

A large framed traditional greenleaf with dark green color. Bergam's Green is a widely adapted variety. It is slow to bolt, strong against tipburn, resistant to heading and suitable for year-round production.

Resistances: HR: TBSV. | IR: Ss.

Muir

Muir is a medium-sized, light green and slow-growing Batavia type. The heads grow very upright and the hearts are well filled. Muir has a sweet flavor and is strong against bolting and internal tipburn. With excellent downy mildew and red aphid resistance, this multi-use variety is appropriate for open field and hydroponic production.

Resistances: HR: Bl:16-26,28,32EU/1-9US/Nr:0/TBSV. | IR: LMV:1.

Stacker

Stacker stands out for its unique upright habit and narrow leaf blade attachment. Dark green leaves with a slightly undulating margin are uniform in shape and size. Stacker has a high leaf count and can be grown for the whole leaf market. For whole head production, Stacker's upright base facilitates packing into boxes or sleeves with minimal breakage. This variety has strong downy mildew resistance and performs best in the spring and fall slots.

Resistances: HR: Bl:16-22,25,31,32EU/1,2,4-9US/TBSV. | IR: Ss.

Tropicana

Proven to be the best heat and bolt tolerant greenleaf variety in its class in trials across the country. Tropicana is tolerant to tipburn and leaf scorching, and is Corky Root resistant. With excellent uniformity and leaf texture, Tropicana can be used in fresh packs or for whole leaf production.

Resistances: IR: Ss.

Redleaf

Red Mist

Red Mist is a redleaf lettuce with a long planting window. Its V-shaped base helps prevent basal rot and packs well. Excellent weight for a redleaf with cores that stay low, Red Mist is slower to bolt and holds its shape well compared to other varieties in its class.

Resistances: HR: Bl:16-26,28,32EU/1-9US. | IR: Ss.



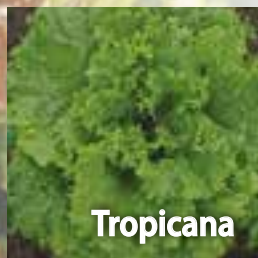
Bergam's
Green



Muir



Stacker

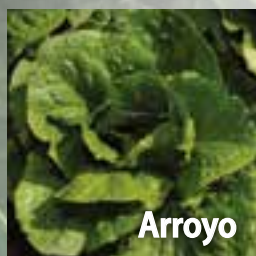


Tropicana



Red Mist

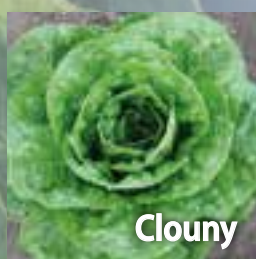
Lettuce



Arroyo



Carneros



Clouny

Green Romaine

Arroyo

Arroyo is an excellent variety that is well suited for both hearts and whole head production. Fresh market and wholesale growers will appreciate the upright habit and attractive color. Tight internodes and a V-shaped base produce high quality hearts. Arroyo is best planted in spring and fall slots.

Resistances: HR: Bl:16-27,29,32,34,36EU/1-8US/TBSV. | IR: Ss.

Carneros

Carneros is a medium green, semi-savoy romaine for heart production. The frame is tall and upright, with a V-shaped base. Early to cup in, fast-filling and with good internal blanching, Carneros is the ideal product model for romaine heart production. Organic growers will appreciate the earliness of this variety.

Resistances: HR: Bl:16-26,28,32EU/1-9US/Nr:0/TBSV. | IR: Ss.

Clouny

Clouny is a dark green romaine with smooth ribs and a glossy leaf texture that is thick, but pliable. The frame is medium-sized with a narrow, V-shaped base that produces beautiful 9 in. (23 cm) hearts. This variety is slow to bolt and can be used for whole head production in Northern regions.

Resistances: HR: Bl:16-34,36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.

ROMAINE							
Variety	Full Size Heads	Hearts	Processing	Spring	Summer	Autumn	Winter
Arroyo	✓	✓		N/S	N	N/S	
Carneros		✓		C		C	
Clouny		✓		N/C		N/C	S
Coastal Star	✓		✓	N	N	N	
Jara		✓		S		S	
Mezquite		✓	✓	N		N	S
Rainier	✓		✓	N/C/S		N/C	

REGION:
 N=Northern (winter freeze) S=Southern (mild winters) C=Coastal (moderate year-round)
 For more specific growing recommendations, contact your regional Vitalis representative.

HR: High resistance | IR: Intermediate resistance
 For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
 Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Lettuce



Coastal Star

Coastal Star

Coastal Star is a well-loved romaine with dark green color and tall stature. The variety is early maturing and produces large, heavy heads that can be used for hearts or fresh pack. Widely adapted and can be grown spring through fall in most regions.

Resistances: IR: Ss.



Jara

Jara

Jara produces top quality hearts with a high level of disease resistance, especially against downy mildew. This romaine is well-suited for front and tail end production in the desert Southwest.

Resistances: HR: Bl:16-36EU/1-9US/Fol:1/Nr:0/TBSV.



Mezquite

Mezquite

A semi-savoy romaine with thick texture, a tapered base and straight ribs. Works well for the heart market, and the nice internal blanching provides an attractive product for the value-added segment as well. Performs best planted October through November in the desert Southwest region, and spring and fall slots in Northern regions.

Resistances: HR: Bl:16-32,34,36EU/1-9US/TBSV. | IR: Fol:1.



Rainier

Rainier

Rainier is a large green romaine for full size heads and fresh cut processing. The variety has an impressive disease package, including improved resistance to downy mildew, Tomato Bushy Stunt Virus (TBSV) and red aphid. Recommended for spring and fall production.

Resistances: HR: Bl:16-27,29,30,32,33EU/1-8US/Nr:0/TBSV. | IR: Ss.

ROMAINE SIZE CLASSIFICATIONS

Lettuce Type	Heart Length
Full	12 in / 30 cm
Midi	10 in / 24 cm
Mini	7 in / 16 cm
Little Gem	4.5 in / 11 cm

Lettuce

Green Mini Romaine

Xalbadora

A mini romaine with great fill, dark green color and high gloss. Xalbadora does well against tip burn and downy mildew, and is widely adaptable for full season production. More upright habit and slightly faster filling than Starhawk, which it replaces.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.

Red Mini Romaine

Breen

Breen is a unique red mini romaine, which closes nicely in the top, resulting in a perfectly formed heart. This great-tasting variety, which resembles a Treviso radicchio in appearance, has light colored veins that provide an attractive contrast with the reddish-brown leaves, and has excellent shelf life.

Resistances: HR: Bl:16-21,23-26,28-36EU/1-9US.

Pomegranate Crunch

This variety is a red mini romaine with an open habit and smooth texture. Faster growing than other red romaine varieties, with a brilliant poppy red color on the outside and a speckled red-green interior. Pomegranate Crunch pairs well with a solid green mini head for an attractive presentation.

Resistances: HR: Bl:16-27,29,34,36EU/1-8US/TBSV.

Green Little Gem

Dragoon

Dragoon is a well-filled, compact little gem. This variety has dark green, semi-savoy outer leaves, matures slowly and keeps a short core. It is strong against bolting and internal tipburn, and is appropriate for open field or unheated greenhouse production.

Resistances: HR: Bl:16-27,29,34,36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.

Newham

Newham is a smooth-leaved green little gem with red aphid resistance in the Spretnak class. Excellent fill, strong tipburn resistance and a very sweet flavor make this variety a standout. Suitable for year-round production in coastal regions, and spring, fall, and winter production in hotter areas.

Resistances: HR: Bl:16-21,23-26,28-36EU/1-9US/Nr:0/Pb. | IR: LMV:1/Ss.

Spretnak

A beautiful and tasty little gem with compact, well-closing heads, smooth outer leaves and tightly packed, blanched hearts. Best for spring and fall cultivation, with strong field tolerance to downy mildew.

Resistances: HR: Bl:16-21,23-26,28-36EU/1-9US/Fol:1/Pb.



Xalbadora



Breen



Pomegranate
Crunch



Dragoon



Newham



Spretnak

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



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Lettuce



Truchas

Red Little Gem

Truchas

A little gem / mini romaine type that provides a stunning contrast between green hearts and dark cherry red leaves. The upright cylindrical shape, good uniformity and ease of cleaning make this an excellent complement to the Vitalis green little gem assortment.

Resistances: HR: Bl:16-36EU/1-9US/TBSV. | IR: LMV:1.



Bellevue

Red Oakleaf

Bellevue

A red oakleaf ideal for full size or mini head harvest. Bellevue has a soft butter-like texture and very sweet flavor. Slightly bronzed cherry-red leaves contrast with a fresh green blanched heart. Excellent field holding capacity for full season production. Compared to Cantarix, Bellevue is slightly more filled and compact, and has improved downy mildew resistance.

Resistances: HR: Bl:16-36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.



Cantarix

Cantarix

Cantarix is a large-sized, dark red oakleaf lettuce with an attractive base. This variety produces dense heads with wide leaves, attractive color contrast and upright growth. Cantarix is best produced in the spring and early fall, with strong downy mildew and red aphid resistance, and excellent flavor.

Resistances: HR: Bl:16-26,28,32EU/1-9US/Nr:0/TBSV.

Lollo Bionda

Ilema

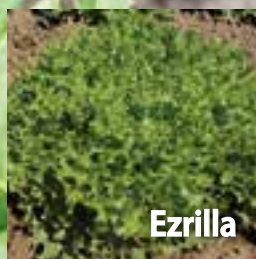
Ilema is an impressively voluminous green lollo, with a strong plant and nice leaf curliness. Ilema has a unique combination of fast growth, good weight, field holding capacity and very sweet flavor. Adaptable to open field and hydroponic growing conditions.

Resistances: HR: Bl:16-33EU/1-9US/Nr:0/Pb/TBSV. | IR: LMV:1/Fol:1.



Ilema

Lettuce **Eazy leaf**®



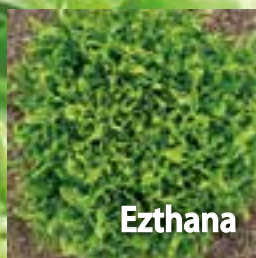
Green Tango



Ezrilla

Ezrilla is a fast-growing green tango with attractively serrated, medium green leaves and a narrow cutting surface. This variety is recommended for adding texture, loft and crunch to the salad mix. Strong disease resistance and slow bolting make Ezrilla an adaptable variety throughout the year in most regions.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Ezthana

Ezthana stands out for its dark green color and compact plant habit. With strong leaves that maintain their shape in a salad mix and a crisp, sweet crunch, this variety is a great addition to the assortment.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Eztron

A vivid green tango variety with superior texture and a flavorful crunch. Leaves are deeply incised with a fine super-frilled outer edge, creating a unique product with amazing volume and loft. Eztron has intermediate speed, with improved bolting tolerance.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.

Red Tango



Burgandy

Deeply incised leaves, crunchy texture and good volume make this red tango a nice complement to our green tango assortment. Burgandy leaves have a narrow attachment, with medium red outer leaf color and a vivid green interior.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0.

Redleaf



Brentwood

A lobed, deep red lettuce with a glossy, soft texture and a lot of dimension. The color contrast between the dark cherry and light green gradation on the leaf is striking. This variety has excellent bolt tolerance and produces leaves with a fine ripple. Good for mini head or one-cut harvest.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0. | IR: Fol:1.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



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Lettuce **Eazy** **leaf**[®]



Green Oakleaf



Hampton

Hampton is a voluminous, high leaf count, one-cut oakleaf. With dark, shiny green leaves that have a narrow attachment, this variety is ideal for mechanical or hand harvest. Very slow to bolt, Hampton is a flexible variety for year-round production.

Resistances: HR: Bl:16-36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.



Red Oakleaf



Buckley

Buckley is a beautiful one-cut red oakleaf. Lobed, deep red leaves grow in an upright rosette, forming a highly presentable variety that can be harvested for whole heads or for a salad mix. Buckley is faster growing than most red varieties, and is suitable for full season production. Pair with Hampton green Eazyleaf for a vibrant display.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Red Romaine



Ezbruke

Ezbruke is a stunning red mini romaine with an open habit for either one-cut or whole head harvest. Heads form uniform leaves that are spring green at the base and deep cherry red on top. For whole head harvest, space plants 6 in. (15 cm) apart. For one-cut harvest, 4 in. (10 cm) spacing is recommended.

Resistances: HR: Bl:16-36EU/1-8US/Nr:0/TBSV. | IR: LMV:1.



Molokai

Molokai is unique red romaine for whole leaf production. This variety produces loose heads of uniform 6 in. x 3 in. (15 cm x 8 cm) leaves. A beautiful red alternative for the whole leaf market.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV.



Red Butter Romaine



Stanford

This variety forms a beautiful rosette of uniform, pliable leaves that are dark red on top and green at the base. Stanford combines the leaf shape and texture of a butterhead, with the upright growth of a mini romaine. To harvest and display as a mini head, plant at 6 in. (15 cm) spacing. When planted at high density (3-4 in. / 8-10 cm), this one-cut lettuce adds a unique leaf shape and color to any salad mix.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



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Heated Greenhouse Lettuce



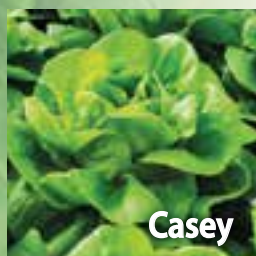
Cristabel

Green Crisp

Cristabel

Frilled ice lettuce leaf type with dark green color and very strong, thick leaf texture. Short core with more upright growth, this variety is high yielding and reliable in various conditions.

Resistances: HR: Nr:0/TBSV.



Casey

Green Butterhead

Casey *new!*

A fresh, medium green colored butterhead for indoor production under long daylength. Casey is medium-fast maturity and yields jumbo sized heads with excellent weight. It has a flat, clean, closed base and a full disease resistance package. Strong roots and good heat tolerance make Casey a great choice for summer production.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/Pb.



Espirando

Espirando

Espirando is a medium-to-large butterhead with fresh green color and reliable performance in spring, summer and fall. The variety is strong against tipburn, yellow leaf edge, downy mildew and aphid damage. Growers will appreciate the closed base, which is easy to clean and allows for a beautiful presentation.

Resistances: HR: Bl:16-26,28-35EU/1-9US/Nr:0.



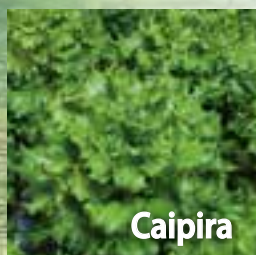
Green Reef

Green Incised

Green Reef

Green Reef is a fast-growing variety, producing upright heads that are flexible and compact. Highly serrated green leaves have a thick texture and a narrow attachment. With excellent production, even in high density systems, this variety works year-round for whole head or one-cut harvests.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/Pb/TBSV.



Caipira

Greenleaf

Caipira

Caipira performs very well year-round, offering an attractive head with spring green color and sweet flavor. The variety maintains its compact size even during the heat, has good leaf size and high tolerance to internal tipburn.

Resistances: HR: Bl:16-26,28,32EU/1-9US/Nr:0/TBSV. | IR: LMV:1.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
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Heated Greenhouse Lettuce



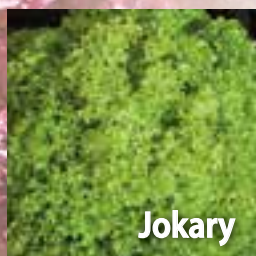
Advisor

Green Oakleaf

Advisor

Oak leaf variety with a strong base and a beautiful shiny color. Advisor is strong against tipburn and bolting.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/Pb/TBSV. | IR: LMV:1.



Jokary

Lollo Bionda

Jokary

Jokary is a quick growing variety with flexible leaves. The plant is compact and easy to pack, with an excellent presentation that especially fits well in trios.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0.



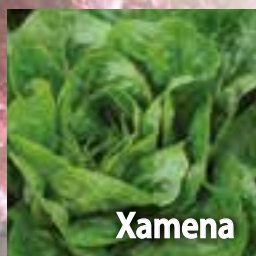
Azirka

Lollo Rossa

Azirka

Azirka is a triple red lollo type that has a very thick, crunchy leaf with nice flavor. The leaf is rounded with good three-dimensional structure. This variety also works well in trios.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Xamena

Mini Romaine

Xamena

Xamena is fast growing, with good top closure and excellent holding capacity for flexible harvests of mini heads or hearts. It produces very nice cylindrical hearts that are well blanched and filled.

Resistances: HR: Bl:16-36EU/1-9US/Nr:0/TBSV. | IR: LMV:1.



Xiomara

Xiomara



Xiomara is a dark green mini romaine with fast growth, very good bolting tolerance and a clean upright base.

Resistances: HR: Bl:16-36EU/1-9US/Fol:1/Nr:0/TBSV. | IR: LMV:1.





Babyleaf Lettuce


Green Romaine

	Aerostar	A medium green romaine with good holding ability, a narrow basal leaf and a smooth rounded top that resists folding in the field. <i>Resistances:</i> HR: Bl:16-27,29,32,34,36EU/1-8US. IR: LMV:1.
	Pensacola	A fast-growing green romaine with a smooth green color. The texture is thick, but pliable, with a slightly serrated margin. The leaf shape is ideal with a narrow attachment. <i>Resistances:</i> HR: Bl:16-29,32,34,36EU/1-9US/Nr:0/TBSV. IR: LMV:1.


Green Oakleaf

	Clearwater	A medium-dark green oakleaf with thick, pliable texture and good flavor. Deeply lobed leaves maintain a narrow attachment and three dimensional quality to increase volume. <i>Resistances:</i> HR: Bl:16-36EU/1-9US/Nr:0/TBSV. IR: LMV:1.
	Surfside	A dark green oakleaf with excellent weight and crunchy texture. Upright growth and a narrow cutting surface allow for easy harvest. <i>Resistances:</i> HR: Bl:16-36EU/1-9US/Nr:0. IR: LMV:1.

Red Oakleaf

	Blade	A beautiful, extremely upright, uniform, cherry-colored oakleaf with good field holding capacity and shelf life. <i>Resistances:</i> HR: Bl:16-36EU/1-8US/Nr:0/TBSV.
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Greenleaf

	Celinet	A greenleaf with a narrow cutting surface, good leaf flexibility and attractive frilled leaf margin. Celinet grows slowly, which allows for a longer harvest window. <i>Resistances:</i> HR: Bl:16-36EU/1-9US/Nr:0/TBSV. IR: LMV:1.
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Arugula

Wild Rocket (*Diplotaxis tenuifolia*)

Anastazia

This variety combines upright, compact growth, dark green leaves and very thick texture. Anastazia has strong field tolerance to downy mildew and is recommended for warm season production.

Resistances: IR: Hp.

Bellezia

Bellezia has an elegant look, with a striking dark color and uniform, highly serrated leaves. Strong field tolerance to downy mildew and excellent shelf life.

Resistances: IR: Hp.

Jolizia

This thick-textured wild arugula has a very dark color, good uniformity and strong resistance to downy mildew.

Resistances: IR: Hp.

Letizia

Letizia has good field tolerance to downy mildew and thick-textured, smooth, medium-green, lobed leaves.

Resistances: IR: Hp.

ARUGULA

Variety	Speed	Leaf Shape	Leaf Color	Bolting Tolerance	Mildew Resistance (IR: Hp)
Anastazia	Slow	Lobed	Dark Green	Medium	Moderate to Good
Bellezia	Slow to Moderate	Highly Serrated	Dark Green	Low	Moderate to Good
Jolizia	Slow	Highly Serrated	Dark Green	Medium	Moderate to Good
Letizia	Slow to Moderate	Lobed	Medium Green	Medium	Low to Moderate



Resistance Makes the Difference logo represents herb and arugula varieties bred for quality traits such as disease resistance and cold tolerance.

Resistance Makes the Difference

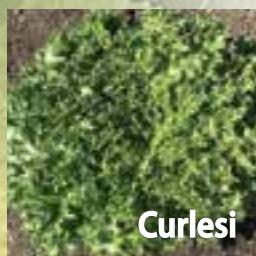
HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



***Celebrating 25 Years of Breeding
and Producing Organic Seeds***



Endive



Curly

Curlesi

Curlesi is a new addition to our endive assortment, complementing Maratoneta and Primaleta by providing strong filling during warm season conditions and with good tolerance to tipburn. This adaptable variety has a vigorous upright habit, compact frame and is well-suited for the fresh market.



Maratoneta

An improved curly endive variety with dark green outer leaves and a well filled, bright yellow heart. Plant habit is upright for ease of harvest and reduction of basal rot. Maratoneta has a large frame and grows best in cooler conditions. Very tolerant to bolting and suitable for both fresh and processing markets.



Escarole

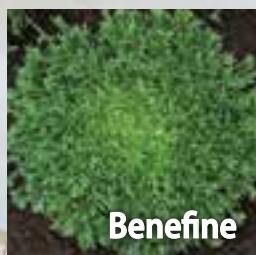
Leonida

Smooth leaf, medium-green endive with a very upright habit, large frame and good volume of external and internal leaves. This variety has a strong tolerance to bolting and tipburn, with good field holding capacity.



Séance

A finely ribbed variety, Séance is voluminous with an erect habit, good heart filling and a clean base. Easy to harvest and very slow to bolt under hot conditions.



Tres Fin

Benefine

An impressive tres fin type with a shiny, dark green exterior color and well-blanching interior. Benefine has compact, upright, tightly filled heads that are strong against bolting. Suitable for growing in warm conditions, Benefine has impressive resistance to tipburn and produces high yields of nicely frilled leaves.

ENDIVE					
Type	Variety	Spring	Summer	Autumn	Winter
Curly	Curlesi	N/S/C	N/C	N/S/C	
	Maratoneta	N/S/C			S/C
Smooth	Leonida	N/S/C		N/S/C	S/C
	Séance		N/C	N/S/C	
Tres Fin	Benefine	N/S/C	N/C	N/S/C	
REGION: N=Northern (winter freeze) S=Southern (mild winters) C=Coastal (moderate year-round)					

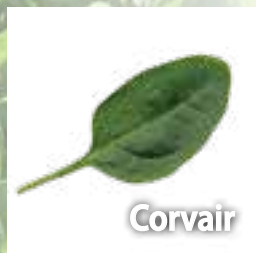
Spinach



Acadia F1

Acadia is a dark green, semi-savoyed spinach with good texture for baby leaf harvest. This slow growing variety has medium-sized, oval leaves and is recommended for main season production.

Resistances: HR: Pfs:1-13,15,16.



Corvair F1

Corvair produces nice oval-shaped, thick leaves that are upright in stature. It has wide adaptability, excellent yield and dark green color. Good in spring, fall and winter production.

Resistances: HR: Pfs:1-11,13,15,16.



Tundra F1 *new!*

A dark green, semi-savoyed spinach, Tundra impressed us with its upright habit and oval leaves that hold their shape, even in the heat. Developed for baby leaf production, this high yielding variety is recommended for spring and fall plantings.

Resistances: HR: Pfs:1-13,15,16.

SPINACH					Pfs RESISTANCE					
Variety	Speed	Bolting Tolerance	BBL	Bunching	1-11	12	13	14	15	16
Acadia F1	Slow	Strong	✓		✓	✓	✓		✓	✓
Corvair F1	Medium	Medium	✓	✓	✓		✓		✓	✓
Tundra F1	Slow to Medium	Medium	✓		✓	✓	✓		✓	✓

Leek



Chinook



Comanche



Oslo



Tadorna

Chinook F1

Chinook is a fast growing summer hybrid with exceptionally long, straight shanks that clean easily in the field. This variety has excellent uniformity and grows quickly even under cold conditions. Plants are medium green and upright. An excellent choice for reliable, high-quality, early season leeks.

Comanche F1

A main season hybrid producing leeks with long shanks that are easy to peel. Comanche has dark green foliage and an upright habit. This adaptable variety has a flexible harvest window and can be marketed loose, in bunches or in cello packs.

Oslo F1 **new!**

Our latest maturing leek, Oslo is a late fall and early winter variety with upright, dark blue leaves and a stocky shank that is easy to peel. This variety performs very well as an over-wintered leek, with impressive bolting tolerance.

Blauwgroene Herfst* Tadorna

Tadorna is a well-loved open pollinated standard for organic growers. This autumn-winter leek is uniform and can fit into most leek programs, given its adaptability to multiple growing regions. Tadorna has long white shanks and is easy to harvest and clean.

LEEK					
Variety	Leaf Color	Early	Main	Autumn	Winter
Chinook F1	Medium Green	✓	✓		
Comanche F1	Dark Green		✓	✓	
Oslo F1	Dark Blue			✓	✓
Tadorna	Blue-Green			✓	✓

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

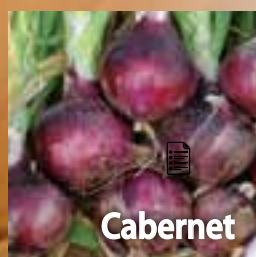
Onion



Gabriella



Madalyn



Cabernet



Monastrell

Short Day

Gabriella F1

Gabriella is a high yielding short day variety that is strong against bolting. Uniform bulbs have a mild to sweet flavor and an attractive globe shape. Yellow to brown in color, onions are large in size and will store for 2-4 months. Maturing mid-to-late season, this beauty will yield an excellent crop for fresh market and short term storage.

Madalyn F1

Madalyn is an early-to-mid short day yellow onion with excellent bolting tolerance for fresh market production. It produces globe shaped, bronze colored onions that are medium to large in size. Bulbs are single centered and tops are upright and vigorous. Madalyn is quick to mature and high yielding.

Intermediate Day

Cabernet F1

Cabernet is a medium-sized, intermediate red onion for storage, fresh market or export. With a vigorous plant habit, Cabernet produces uniform globe shaped bulbs of outstanding holding ability and quality. Excellent internal ring color development combined with single centers and partial resistance to foliar diseases make this variety a standard for organic onion production. Typical harvest is July through August, offering earliness, firmness and 4-6 month storability.

Monastrell F1

Monastrell is an intermediate day onion that boasts high quality bulbs. Plants are upright and strong against disease. With round to slightly flat shapes, this dark red onion shows strong sunscald tolerance. Monastrell matures slightly later than Cabernet and is larger in size. This variety has excellent internal ring color development and impressive storage capability for its class.



Cauliflower



Janvel F1

Dense, well-filled curds make this an attractive variety for both fresh market and processing. Tall leaves of this vigorous plant provide excellent sunburn protection for curds. Recommended for late summer and fall harvest.



Mardi F1

Mardi is an early maturing cauliflower that develops uniform, white heads averaging 1.3-1.8 lb. (600-800 g). Plant habit is vigorous and upright, with partially self-wrapping leaves to protect the curds. Mardi is appreciated for its sweet, nutty flavor, and can be grown in the spring, summer and fall in Northern climates.

Radish



Celesta F1

Celesta produces red, round, uniform bulbs of excellent quality. It has compact, strong, upright foliage that allows for easy harvest. Celesta is broadly adaptable and recommended for open field and high tunnel production.

Pearl

A white, smooth, round radish with a small green neck for open field production. Pearl has very vigorous growth and good resistance to cracking. It is adaptable as a processing radish in cello bags or in fresh bunches, due to its strong tops. This variety shines when mixed with red round radishes.



Fennel



Preludio F1

Preludio is an early variety with good bolting tolerance. It produces uniform, round bulbs of standout quality and yield. Compact plants are very upright and bulbs have a narrow cutting surface for ease of harvest. With succession plantings, Preludio can be successfully harvested in spring, summer and early fall.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Cucumber



Corinto



Paraiso

American Slicer

Corinto F1

An adaptable slicer variety that sets well under cool conditions. This variety is very productive and produces cylindrical, dark green, shiny, smooth fruit of 8-10 in. (20-25 cm) in length. The excellent disease resistance package makes this variety a great choice for both open field and unheated greenhouse production.

Resistances: IR: Px/CMV/CVYV.

Paraiso F1

Paraiso is a very flexible variety adapted well to varying growing conditions. The plant is vigorous and produces well in cold conditions. Fruits average 8-9 in. (20-22 cm) long, and are cylindrical, shiny and dark green. They have good shelf life and retain an attractive shine in storage.

Resistances: IR: Px/CMV/CVYV/CYSDV.



Cucumber



Kalunga



Poniente



Roxynante



Tyria

Long European Type (LET)

Kalunga F1

Kalunga is a strong, compact, productive plant, that grows well in many different climates and planting slots. This early maturing variety produces one fruit per node. Dark green fruit are slightly ribbed and 12-13 in. (31-34 cm) in length. Fruits have good extended shelf life and are recommended for unheated greenhouse production.

Resistances: HR: Cca/Ccu. | IR: Px.

Poniente F1

Poniente offers a strong resistance package and produces uniform dark green fruit that are 12-13 in. (31-34 cm) long and nicely ribbed. The plant habit is vigorous with a dependable fruit set, 1-2 fruit per node and early maturity. Recommended for unheated and heated greenhouse production, Poniente performs best in the spring and fall in hot climates, and does well in spring, summer and fall in cooler climates.

Resistances: HR: Ccu. | IR: CMV/CVYV/CYSDV/Px.

Roxynante F1

Roxynante produces fruits that are dark green, cylindrical and slightly ribbed. It has excellent cold tolerance and high productivity. Fruits grow very straight, measuring 12-13 in. (31-34 cm) in length. Best grown in unheated greenhouse production for fall and winter production.

Resistances: HR: Cca/Ccu. | IR: CVYV.

Tyria F1

Tyria is a very vigorous variety, developing dark green, slightly ribbed, well-filled fruits of 13-14 in. (33-36 cm) in length with a gradual production change from the main stem to the laterals. It can be grown in the open field and unheated greenhouse over a broad range of seasons.

Resistances: HR: Cca/Ccu. | IR: Px.

LONG EUROPEAN TYPE (LET)

Variety	Plant Habit	Open Field	High Tunnel/ Unheated Greenhouse	Heated Greenhouse	Length (in)	Length (cm)	Slotting
Kalunga	Balanced		✓		12-13	31-34	Flexible
Poniente	Vigorous		✓	✓	12-13	31-34	Flexible
Roxynante	Vigorous		✓		12-13	31-34	Cool/Low Light
Tyria	Vigorous	✓	✓		13-14	33-36	Flexible

All Vitalis cucumbers have all female flowers and are parthenocarpic (fruits can set without pollination).

Cucumber

Mini

Katrina F1

Katrina is a robust and productive mini cucumber with an open plant habit and only a few laterals. The fruits, 3-4 per node, are of top quality with great flavor. They are glossy, nicely ribbed, very uniform and 6 in. (16 cm) in length. Good resistance package for unheated greenhouse production.

Resistances: HR: Ccu. | IR: CMV/CVYV/Px.

Picolino F1

Picolino is a widely adaptable mini cucumber variety that is the smallest of the Vitalis assortment. Produces high quality, dark green, shiny fruits of 4-5 in. (10-13 cm) that are nicely ribbed and extremely uniform. With 3-4 fruits per node, the compact, vigorous plants are early to produce.

Resistances: HR: Cca/Ccu. | IR: CMV/CVYV/Px.

Socrates F1

Socrates is a dependable variety that produces dark green fruits of 6-7 in. (16-17 cm), which are both tender and sweet. Adapted to open field and unheated greenhouse conditions, Socrates performs best in spring and fall.

Resistances: HR: Ccu. | IR: Px.

Pickling

Excelsior F1

Excelsior is a high quality pickling cucumber for both open field and unheated greenhouse production in spring and fall. It has an open and vigorous plant habit, with fruits that are medium to dark green and 4-5 in. (10-13 cm) in length.

Resistances: HR: Cca/Ccu. | IR: CMV/CVYV/Px.



Katrina



Picolino



Socrates



Excelsior

MINI

Variety	Plant Habit	Open Field	High Tunnel/ Unheated Greenhouse	Heated Greenhouse	Length (in)	Length (cm)	Slotting
Katrina	Compact		✓	✓	6	16	High Heat/ High Light
Picolino	Vigorous		✓		4-5	10-13	Flexible
Socrates	Vigorous	✓	✓	✓	6-7	16-17	Flexible

PICKLING

Excelsior	Vigorous	✓	✓		4-5	10-13	Flexible
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All Vitalis cucumbers have all female flowers and are parthenocarpic (fruits can set without pollination).

Tomato



Beef

Arbason F1

Arbason is a large-sized beef tomato with an average weight of 7.0-9.0 oz. (200-255 g). Suitable for protected culture and open field production systems, Arbason is early maturing. The fruit is round in shape and has good quality with high production. The indeterminate plant grows very vigorously and is highly reliable under a wide variety of growing conditions.

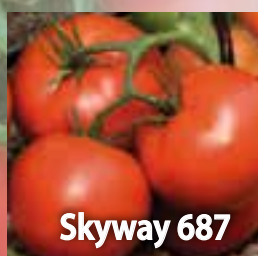
Resistances: HR: ToMV:0-2/Va:0/Vd:0/Fol:0-1.



Caiman F1

This early maturing and high yielding indeterminate hybrid has a vigorous, open, compact plant with short internodes and good fruit set. The round fruit are large in size, 12 oz. (355g), very tasty and have an attractive deep red color. Caiman is easy to cultivate, has leaf mold resistance and is recommended for high tunnel production.

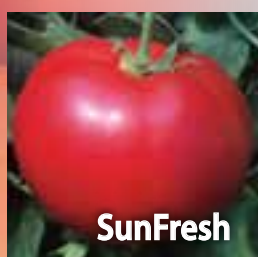
Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-1. | IR: TSWV/Ma/Mi/Mj.



Skyway 687 F1

Skyway 687 produces large, high quality 12 oz. (355 g) tomatoes for open field production. This variety is especially well-suited for organic production in the Southeast because of its strong disease package, including virus and nematode resistance. Skyway has a vigorous, semi-determinate habit, and benefits significantly from pruning of ground shoots at the start of the crop. Wide adaptability to diverse growing conditions and regions.

Resistances: HR: ToANV/Va:0/Vd:0/Fol:0-2. | IR: TSWV/TYLCV/Ma/Mi/Mj.



SunFresh F1

This attractive variety caught our eye from the very earliest trials with its deep red interior and exterior color, slight shoulder ribbing and flat globe shape. The strongly vegetative habit of this semi-determinant variety has the added advantage of producing well in low-fertility conditions. Bred specifically for the vine-ripe market, with good fruit firmness and a strong disease package, SunFresh is a unique new addition to the market.

Resistances: HR: ToANV/Va:0/Vd:0/Fol:0-2. | IR: TSWV/TYLCV/Ma/Mi/Mj.



Suwane 140 F1

Suwane 140 produces beautiful deep globe fruit that are predominately extra-large, averaging 10.6 oz. (300 g). With a highly determinate plant habit, the early maturity and excellent leaf cover make this variety widely adaptable. Fruits are a deep red color, uniform, smooth and firm, with a nice flavor balance of acidity and sweetness. Strong disease package.

Resistances: HR: ToANV/Va:0/Vd:0/Fol:0-2/For. | IR: TSWV/TYLCV.



Winterhaven 163 F1

Winterhaven 163 is a determinate round beef for open field production, with high yields of extra-large fruit averaging 10.2 oz. (290 g). Fruits are highly uniform, firm and smooth, with low incidence of gray wall. This variety performs very well in the late fall and early spring seasons in the Southeast. Due to the vegetative plant habit, pruning is recommended based on soil type: for light soils, leave two suckers below the fork and for heavy soils, leave three suckers below the fork.

Resistances: HR: ToANV/Va:0/Vd:0/Fol:0-2. | IR: TSWV/TYLCV.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Tomato



Sakura

Cherry

Sakura F1

Sakura is a standout cherry tomato, producing beautiful mid-sized round fruit of 0.6-0.8 oz. (18-22 g) with a sweet and tangy flavor. The fruits are tolerant to cracking, with well-attached sepals and magnificent trusses of 20 fruits or more. Well adapted to open field and unheated greenhouse production.

Resistances: HR: ToMV:0-2/Ff:A-E/Fol:0-1. | IR: Ma/Mi/Mj. | T: Si.



Toronjina

Toronjina F1

Toronjina is a highly attractive orange cherry tomato with vibrant color and good tolerance to cracking. Adaptable to open field and unheated greenhouse production, this orange cherry is an excellent addition to mixed pints of colored cherry tomatoes. Produces high yields of 0.5-0.7 oz. (15-20 g) tomatoes.

Resistances: HR: ToMV:0-2/Ff:A-E/Fol:0-1.



Matthew

Grape

Matthew F1

Matthew is a unique variety that combines a robust plant habit and attractive orange grape tomatoes with great flavor. Plants are vigorous, early maturing and well-balanced. On average, fruits are 1.2 oz. (35 g) and can be grown in open field and unheated greenhouse systems year round.

Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-1/For. | T: Si.

Tomato



Plum

PaiPai F1

PaiPai is an indeterminate plum tomato that produces extra-large fruit averaging 6.4 oz. (180 g). Tomatoes of 6-8 per cluster ripen evenly and are not susceptible to grey wall. The plant is notably strong and compact, and pruning is recommended to ensure proper aeration of the vigorous vines. With short internodes that allow for high yields, firm fruits and extended shelf life, PaiPai is a profitable variety for both growers and shippers.

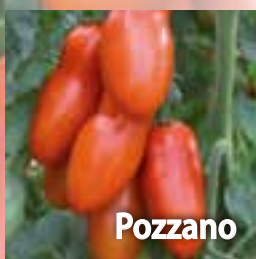
Resistances: HR: ToMV:0-2/Va:0/Vd:0/Fol:0-1. | IR: TSWV/Ma/Mi/Mj.



Granadero F1

An indeterminate plum tomato variety with a compact vigorous plant for the open field or unheated greenhouse production. Granadero delivers high yields of large fruit, with an average weight of 5.0 oz. (150 g), and demonstrates tolerance to cooler conditions.

Resistances: HR: ToMV:0-2/Lt/Va:0/Vd:0/Fol:0-1. | IR: TSWV/Ma/Mi/Mj.



San Marzano

Pozzano F1

A traditional looking 'San Marzano' tomato that produces a bountiful yield of smooth shaped, uniform fruit of 5.0 oz. (150 g). Fruits are robust, without green shoulders, and have good tolerance to blossom end rot. The firm fruits have excellent shelf life.

Resistances: HR: ToMV:0-2/Va:0/Vd:0/Fol:0-1.



Marmande

Marsalato F1

This unique Marmande tomato originates from our specialty breeding program in Italy, and yields high numbers of 6.7 oz. (190 g) red fruit with deeply ribbed shoulders, a shiny exterior and small blossom scar. With a balanced, generative growth habit and leaf mold resistance, Marsalato is well-suited for protected culture, but also is adaptable to the open field, especially in more moderate climates. We suggest harvesting fruit with slightly green shoulders for a crisp texture and a tangy flavor.

Resistances: HR: ToMV:0-2/ToANV/Ff:A-E/Va:0/Vd:0/Fol:0/For.



Pink

Dimerosa F1

Dimerosa is an indeterminate pink beef tomato suitable for high tunnel production. Fruits are large and flat-round, with a dark pink color and subtle ribbing. Dimerosa fruit are strong against cracking and weigh an average of 6.4-7.8 oz. (180-220 g). Plants are relatively short with early maturity, high yielding and boast a strong disease package. Adaptable across a broad range of production areas.

Resistances: HR: ToMV:0-2/ToANV/Ff:A-E/Aal/Va:0/Vd:0/Fol:0-1. | IR: TSWV/TYLCV/Ss.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
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Heated Greenhouse Tomato



Large Beef

Frederik F1

Frederik is an adaptable variety that performs well in all conditions, including under periods of low light. With resistance to leaf mold and powdery mildew, this indeterminate tomato has excellent endurance and strong vigor for long cycles. Pruned trusses of four will produce large, firm, flat-round tomatoes averaging 10 oz. (283 g). Frederik's high quality fruits have excellent shelf life.

Resistances: HR: ToMV:0-2/Ff:A-E/Fol:0-1/For. | IR: On.



Stenza F1

Stenza is a beefsteak variety that consistently yields uniform fruits averaging 9.9-10.6 oz. (280-300 g). Indeterminate plants have good leaf coverage and strong productivity throughout the growing season, especially during the hottest periods, with minimal flower abortion. Fruits have a long shelf life and a well-balanced flavor.

Resistances: HR: ToMV:0-2/ToANV/Ff:A-E/Fol:0-1/For.



Tomato on the Vine (TOV)

Maxeza F1

Maxeza is a unique truss tomato that combines high yield potential with good fruit color and firmness. The plant is very vigorous and will maintain uniform fruit sizes of 4.9-5.3 oz. (140-150 g), even during the heat of the summer. Maxeza is the perfect variety for growers who are aiming for early and sustained production.

Resistances: HR: ToMV:0-2/Ff:A-E/Fol:0-1/For. | IR: On. | T: Si.



Cocktail

Annamay F1

Annamay is a slightly smaller cocktail tomato with an average weight of 1.2-1.4 oz. (35-40 g). Balanced plants have good vigor and a strong resistance package. The trusses are well-shaped, compact and very uniform. Attractive fruits are glossy and crack-resistant, with a sweet, aromatic flavor.

Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-1. | IR: On. | T: Si.



Cherry

Tomagino F1

Tomagino stands out for its sweet flavor and its strong resistance to splitting. Well-balanced plants have excellent setting and are fast to mature, making it suitable for year round production. Expect 0.6-0.7 oz. (17-20 g) fruits, with superior color and shine, on highly uniform vines. This variety also works well for TOV (tomatoes on the vine) production.

Resistances: HR: ToMV:0-2/Va:0/Vd:0/Fol:0/For. | IR: On.



Grape

Garincha F1

Garincha is a beautiful, oval shaped grape tomato for heated greenhouse production. It has a vigorous, easily-balanced plant type. Uniform fruits are 0.4 oz. (12 g) in size with an attractive, shiny red color. The production capacity of Garincha is extraordinary. Trusses set well as the plant grows, staying in balance through a long cropping cycle. Garincha is very suitable for loose harvest, but also can be harvested on the truss.

Resistances: HR: ToMV:0-2/Fol:0-1. | IR: TSWV/Ma/Mi/Mj.

Sweet Pepper



Olympus



Placepack



Sprinter



Abay



Brocanto

Blocky Green to Red

Olympus F1

Olympus is an extra-large, 4 in. (10 cm+) and slightly elongated blocky bell. It colors from green to dark red and has thick side walls. It is very productive and has a vigorous bush that provides plenty of shade for those long seasons. Recommended for open field production.

Resistances: HR: Xcv:1-3.

Placepack F1 *new!*

This attractive dark green bell pepper boasts resistance to all known races of bacterial leaf spot, and is the first commercially available organic pepper variety with this resistance package. Fruit are extra-large, averaging 4 in. (10 cm) with thick walls, smooth skin and a high percentage of four lobes. Leaf coverage is good to prevent sunburn.

Resistances: HR: Xcv:1-10/PVY:0-1/Tm:0. | IR: TEV.

Sprinter F1

Sprinter produces high yields of beautiful 3.5 in. (8-9 cm) peppers for a long production period. This variety is not sensitive to blossom end rot or russetting. Sprinter will turn a brilliant red at maturity, with thick walls and sweet flavor. Recommended for open field and unheated greenhouse production.

Resistances: HR: Tm:0-3.

Blocky Yellow

Abay F1

Abay produces extra-large fruits of 4 in. (10 cm) with thick walls that mature from dark green to yellow. Suitable for spring and fall plantings in the open field in the Southeast, and as a late season main crop in the Northeast and Midwest. Excellent Bacterial Leaf Spot resistance.

Resistances: HR: Xcv:1-5/Tm:0.

Brocanto F1 *new!*

Brocanto is a blocky yellow bell well-suited for high tunnel production. Fruit are a bright yellow color, with excellent uniformity and smooth skin. Plant habit is vigorous and benefits from trellising. Brocanto's color and size, averaging 3.5 in. (8-9 cm), pairs well with Sprinter and Milena to create an attractive display.

Resistances: HR: Tm:0-3. | IR: TSWV:0.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Sweet Pepper



Milena



Mozart



Oranos



Bastan

Blocky Orange

Milena F1 

Milena is an early maturing orange bell. High quality fruits have a dark orange color and large size, averaging 3.5 in. (8-9 cm). The plant has a vigorous, open habit with good yield and strong resistance to viruses. Best suited for open field and unheated tunnel production. Milena is a standout variety that delivers uniform fruits and high productivity.

Resistances: HR: PVY:0-1/Tm:0-3. | IR: TSWV:0/TEV.

Mozart F1

Mozart is a brilliant orange blocky pepper for unheated greenhouse production. Uniform, high quality, blocky fruits are resistant to cracking. Fruits maintain extra-large size of 4 in. (10 cm) over a long harvest cycle. The plant has an open habit that is easy to prune. Mozart is widely adapted.

Resistances: HR: Tm:0-3. | IR: TSWV:0.

Diverse Pepper

Long Sweet Conical

Oranos F1

This outstanding orange conical pepper is a very early variety that produces vigorous plants with fruits 7 x 1.5 in. (18 x 4 cm) in size. Oranos is especially appreciated for its high yields and easy growth habit. Staking this variety is recommended to ensure a long harvest window.

Resistances: HR: Tm:0.

Hot Pepper

Ancho

Bastan F1

This flavorful pepper has good heat and matures to a beautiful chocolate color. Medium sized fruits average 5.5 x 2.5 in. (14 x 6 cm), are thick walled and have a dark green color prior to ripening. The plant produces a concentrated set of consistently high quality fruits for fresh market. Thanks to robust leaf cover and medium-early maturity, Bastan delivers excellent yields.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.

Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

For explanation of codes of resistances, see page 43-45.

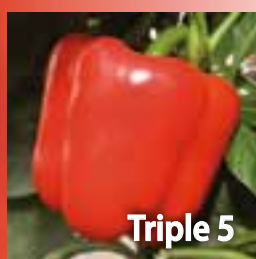
Heated Greenhouse Pepper



Maveria



Ocelot



Triple 5



Viper

Blocky Red

Maveria F1

Maveria is a balanced plant with easy setting in low light conditions. Extra-large and jumbo fruit which average 3.5 in. (8-9 cm) are fast to turn red. Maveria should be grown in a vegetative production system, especially poly structures, for optimal performance.

Resistances: HR: Tm:0-2. | IR: TSWV:0.

Ocelot F1 *new!*

Ocelot is a large blocky red bell pepper with the flexibility for both summer and winter crops. The strong, full body plant allows for high yields throughout the production cycle, maintaining good fruit sizes of 4 in. (10 cm) with excellent quality.

Resistances: HR: Tm:0-3. | IR: TSWV:0/Ma/Mi/Mj.

Triple 5 F1

Triple 5 has a semi-open plant architecture and a generative habit that sets fruit easily. This high yielding variety works best when managed as a fast growing crop. High quality fruits are uniform and blocky during the entire life of the crop. Fruits average 3.5 in. (8-9 cm).

Resistances: HR: Tm:0-3. | IR: Ma/Mi/Mj.

Viper F1

Viper is a high quality variety with good yields that is also fairly early. Fruits average 3.5 in. (8-9 cm) and have an impressive weight. Fruit set is regular and evenly distributed throughout the plant, adaptable to almost all conditions. Viper has an open plant habit with a lot of vigor, and is best grown at high speed.

Resistances: HR: Tm:0-2.

Heated Greenhouse Pepper



Eurix

Blocky Yellow

Eurix F1

This yellow blocky bell pepper was a standout in trials for its early maturity, consistently high yields and ease of fruit set. Eurix has a strong root system which contributes to a uniform fruit size of 3.7 in. (9.4 cm), as well as adaptability to a range of growing conditions while maintaining a generative balance. Fruit is light green when immature, and colors to a medium yellow, with exceptional shelf-life.

Resistances: HR: Tm:0-2.



Gialte

Gialte F1

Gialte is a yellow blocky pepper with exceptional production and quality. The flexible nature of this variety makes it well-suited to all cultivation systems. Fruit size is medium to large, and works well for mixed bag sales. With an attractive yellow color, good uniformity and excellent shelf-life, Gialte is a great addition to a colored bell program.

Resistances: HR: Tm:0-3.

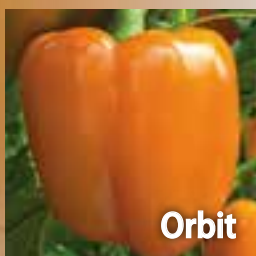


Sabour

Sabour F1 *new!*

Sabour produces blocky fruit sized 3.5 in. (8-9 cm) that mature to a bright lemon yellow color. Fruit are extremely uniform and maintain their yellow color even during long daylight conditions. Sabour has good vegetation, production is improved in dry climates and when grown under diffuse glass.

Resistances: HR: Tm:0-3.



Orbit

Blocky Orange

Orbit F1

Orbit is an orange blocky bell pepper with a vigorous plant habit and high yield. Recent trials in Canada, the USA and Mexico have shown Orbit to be adaptable in early and late sowings and productive throughout the season. Fruits average 3.3-3.5 in. (8-9 cm). This exciting addition offers growers a versatile and high-quality orange pepper with impressive shelf life that will nicely round out their assortment.

Resistances: HR: Tm:0-3.



Originale

Originale F1 *new!*

This orange bell pepper produces blocky fruit with good quality that are an ideal size for bagging (3.5 in., 8-9 cm) and strong against pitting. The plant is moderate in height with an open, generative structure that can be grown in either glass or poly structures. Originale sets fruit early, and colors quickly, producing high yields that are easy to harvest.

Resistances: HR: Tm:0-3. | IR: TSWV:0.



Rootstock

Tomato Rootstock

Espartano F1

Espartano is our strongest rootstock, maintaining a balanced growth effect on the scion and not becoming too vigorous. The endurance of this rootstock ensures excellent plant vigor and high fruit production until the end of the growing season. In long season production (8+ months), when the roots are stressed by moving from cold to warm weather, Espartano ensures that the average fruit weight remains stable, resulting in increased total yields.

Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-2/For. | IR: TSWV/Ma/Mi/Mj.

Estamino F1

A vigorous rootstock with an early generative effect on the growth of the scion. An Estamino graft results in a well-balanced plant with steady production throughout the cultivation cycle. Estamino can be used to control excessive vegetative growth and increase total yield. This rootstock is recommended for short season (5-7 months) production.

Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-2/For. | IR: TSWV/PI/Ma/Mi/Mj.

Fortamino F1

Fortamino is especially recommended for use when transplanting into hot or stressed growing conditions. The strong root system provides extra vegetative power to the scion in the early stage of growth, developing very good leaf cover and ensuring excellent recovery after experiencing unfavorable conditions. Grafting onto Fortamino rootstock will also increase the number of flowers per truss, the average fruit weight and fruit size uniformity, especially for large-fruited heirlooms. Fortamino is adaptable to both short and long season production.

Resistances: HR: ToMV:0-2/Ff:A-E/Va:0/Vd:0/Fol:0-2/For. | IR: TSWV/PI/Ma/Mi/Mj.

Cucurbit Rootstock

Flexifort F1

Use of Flexifort rootstock is recommended for cucumber, melon and watermelon growers seeking a longer, healthier crop. This rootstock brings increased vigor and a high return of quality fruits. Flexifort is an interspecific *Cucurbita maxima* x *Cucurbita moschata* cross that combines nicely with a wide number of varieties. It provides resistance to several soil borne diseases, as well as abiotic stresses such as drought, temperature extremes and high salinity.

Resistances: HR: Fom:0-2/Fom:1.2/Fon:0-1/Foc. | IR: Forc.

Pepper Rootstock

Scarface F1

For growers struggling with nematode pressure in their tunnel or greenhouse, Scarface pepper rootstock is the solution! Scarface performs best when grafted to generative scions, and will increase yields by extending the production season longer than is possible with ungrafted plants. Scarface can be used in both heated and unheated greenhouse conditions.

Resistances: HR: Tm:O. | IR: Ma/Mi/Mj.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Eggplant

Annina F1

This gorgeous striped eggplant will not fail to impress growers and eaters alike. This adaptable variety produces well in both high tunnel and open field production systems, and yields half-long, uniform fruit that average 0.7 lb. (318 g). Growers will appreciate the spineless calyx, and customers will love the deep purple color striped with fine white lines.

Traviata F1

Traviata is a strong growing, well-balanced plant that produces half-long, uniform, black, shiny fruits. A high yielding and early variety recommended for spring and summer open field and unheated greenhouse production.

Melon

Specialty Cantaloupe

Divergent F1

Divergent defies classification—part Cantaloupe, part Galia, all flavor! This variety is sweet (Brix 15-18°), juicy and ripens earliest in its class. Orange fleshed, round fruits are medium-size, 2.6-3.0 lb. (1.2-1.4 kg) and set close to the crown for a concentrated harvest. Succession plantings are recommended for a continuous supply throughout the season, as the early maturity allows for the crop to be harvested in two to three passes. Noted for its uniformity in maturity, melons are ready to harvest when the netting begins to turn from green to tan. Divergent is an adaptable, high yielding variety that performs well in many regions, including northern areas with shorter seasons. Recommended for fresh market production only.

Resistances: HR: Fom:0-2. | IR: Gc:1/Px:1-2,5/Ag.

Italian Netted

Iperione F1

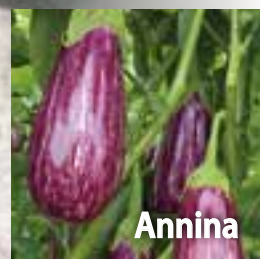
Iperione is a modern Tuscan variety that delivers on yield, field holding ability and eating quality. The creamy shell and persistent green sutures contrast well to create an outstanding presentation in stores or at the farm stand. Fruit are uniform, with very good shelf-life.

Resistances: HR: Fom:0-2. | IR: Px:1-2,5/Ag.

Tirreno F1

Tirreno is a favorite among northern growers. It was selected for its flavor, uniformity and solid production under organic conditions. Tirreno produces round to slightly high round fruits with uniform sutures and thick netting. It has excellent fruit quality with good flesh structure and a slightly thick, green rind. Brix levels average 13-15°. Exterior skin color is grey to cream with an interior orange flesh color. It produces 2.6-3.0 lb. (1.2-1.4 kg) fruits.

Resistances: HR: Fom:0-2/MNSV. | IR: Px:1-2,5.



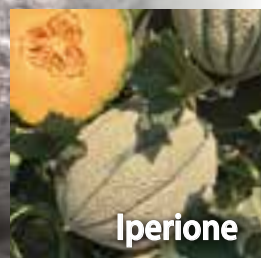
Annina



Traviata



Divergent



Iperione



Tirreno

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Summer Squash

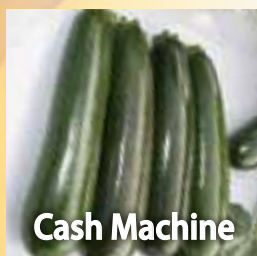


Zucchini, Green

Alessandra F1

Alessandra is a green zucchini with impressive disease resistance and intermediate maturity. Dark green, cylindrical fruits are formed on a balanced, upright plant. Fruits set well under hot conditions. Alessandra is recommended for summer through fall production, especially in areas with high virus pressure.

Resistances: IR: Px/CMV/ZYMV/WMV/PRSV.



Cash Machine F1

Cash Machine produces very high quality medium dark green zucchini with light flecking and a small blossom scar. Plant habit is compact, upright and semi-open, making this variety a great choice for high tunnels and tight spacing. Combined with its excellent disease package, Cash Machine delivers high yields of uniform, attractive fruit.

Resistances: IR: Px/CMV/ZYMV/WMV.



Desert F1

Desert produces very dark green uniform fruits that set well under a variety of conditions. Fruits are straight, uniform and slightly speckled. Open, compact plants allow for easy harvest. Desert works well under high tunnel production conditions due to early and productive flowering. It has a strong disease resistance package.

Resistances: IR: Px/CMV/ZYMV/WMV/PRSV.



Dunja F1

Dunja has emerged as a standout variety for organic production. The plant has a vigorous, open growth habit, sets fruits easily and is high yielding. Fruits are medium-dark green, moderately flecked and shiny. Dunja also has a strong disease resistance package, and is appropriate for open field or tunnel production.

Resistances: IR: Px/ZYMV/WMV/PRSV.



Green Machine F1

Consistently a top performer in Midwest and East Coast field trials, Green Machine is a steady producer of uniform, medium green fruits of exceptional quality. With high yield potential and an open, labor-friendly plant habit, Green Machine also offers strong protection against virus and powdery mildew.

Resistances: IR: Px/CMV/ZYMV/WMV.

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
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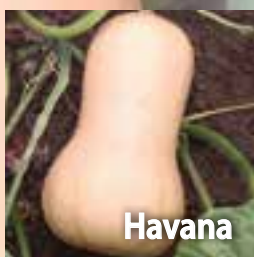
Summer Squash



Mexicana



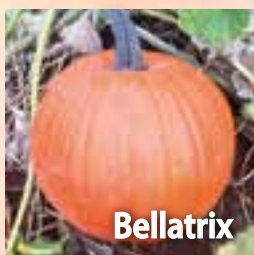
Yellowfin



Havana



Tiana



Bellatrix

Zucchini, Grey

Mexicana F1 **new!**

Mexicana is the most recent addition to our expanding cucurbit assortment, and offers higher yields and ease of harvest compared to the competition. Fruit are early, uniform, grey-green in color, and highly prolific. The upright, open plant habit is characteristic of the Vitalis zucchini breeding program. Mexicana's flavor is nutty and tender and definitely worth a try!

Resistances: IR: Px/CMV/ZYMV/WMV/PRSV/SLCV.

Zucchini, Yellow

Yellowfin F1

Yellowfin has a brilliant yellow color and produces high yields of straight, cylindrical fruits. Compact plants are vigorous and have an open habit for ease of harvest. This variety has the vigor and disease resistance required to withstand tough field conditions and still produce an abundant harvest. Strong resistance to powdery mildew.

Resistances: IR: Px/CMV.

Winter Squash

Butternut

Havana F1

Havana is the largest of our butternuts, with tan fruits that average 3-4 lb. (1.3-1.8 kg). This variety is uniform and extremely productive. Blocky fruits have a thick neck and a small seed cavity. Flesh is deep orange color with a nutty flavor. The plant is vigorous and semi-vining, with some tolerance to powdery mildew. Havana has good post-harvest shelf life, and ripens fairly early for its size.

Resistances: IR: Px/ZYMV.

Tiana F1

Tiana is a blocky, slightly cylindrical variety with an average fruit size of 2.2-2.5 lb. (1.0-1.2 kg) and fruit dimensions of 7 x 3 in. (18 x 8 cm). The yield potential of Tiana is up to 50% higher than any open pollinated butternut. The fruit quality is very consistent and the exterior skin color is a dark tan color.

Resistances: IR: ZYMV.

Halloween Pumpkin

Bellatrix F1

Our first Halloween pumpkin, Bellatrix stands out as a widely adapted large-fruited orange pumpkin with a strong, dark green handle. The variety has a flexible planting window due to its early maturity, and yields fruit that average 20-25 lb. (9.1-11.3 kg) in Southern latitudes, and upwards of 25 lb. (11.3 kg) in the North.

Resistances: IR: Px.

Herbs

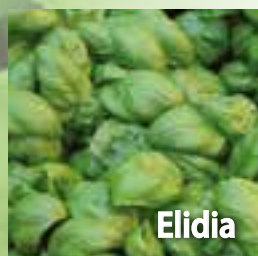


Herbs recommended for pot production.

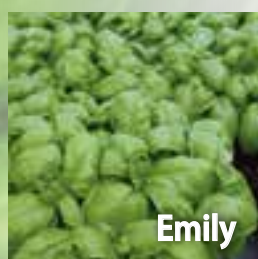
Basil *Ocimum basilicum*



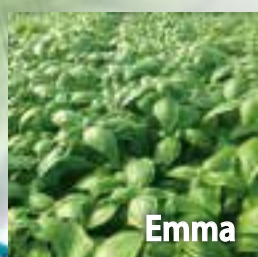
Dolly



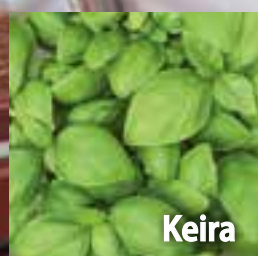
Elidia



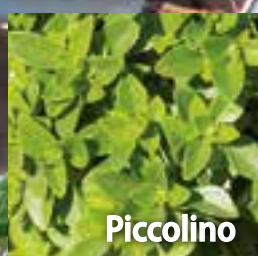
Emily












Emma



Keira



Piccolino

 Dolly	<p>Our largest-leaf Genovese type basil that is very uniform and fast growing. Dolly demonstrates better tolerance against low temperatures compared to other basil varieties.</p>
 Eleonora	<p>Eleonora is a fast growing variety that has intermediate resistance to downy mildew – it is consistently slower to get downy mildew than other varieties on the market. Medium green leaves are slightly narrower and less cupped than a traditional Genovese type.</p> <p><i>Resistances: IR: Pb.</i></p>
 Elidia	<p>Elidia is a Genovese type with intermediate resistance to Fusarium. Large, dark green, glossy leaves are borne on thick, sturdy stems with medium internodes. This variety is high yielding and very slow to bolt.</p> <p><i>Resistances: IR: Fob.</i></p>
 Emily	<p>A compact Genovese type with medium to large leaves. Emily is highly recommended for its improved shelf-life. Adapted to both field and greenhouse production, with excellent leaf and plant size for whole plant sales or fresh cut.</p>
 Emma	<p>The next generation of our downy mildew tolerant basil varieties, Emma is particularly well-suited for indoor pot production. Emma has short internodes and uniform cupped leaves.</p> <p><i>Resistances: IR: Pb.</i></p>
 Genoveser	<p>Traditional cup-shaped, dark green, shiny leaved variety for field production. High yielding with strong, sweet basil aroma.</p>
 Keira	<p>Keira has been bred for improved shelf-life and post-harvest tolerance to cold temperatures. Medium size, shiny leaves and short internodes are ideal for pot production, but also works in the open field. Keira delivers an attractive end product after transport.</p>
 Piccolino	<p>Piccolino is a specialty 'Greek' type basil that produces uniform, compact plants with small, aromatic leaves. The globe shape plant habit is particularly well-suited for pot production or for use in ornamental plantings.</p>
 Rosie	<p>Improved 'Red Rubin' basil with a consistent, intense dark red color and compact and upright growth on robust stems.</p>

HR: High resistance | IR: Intermediate resistance
For explanation of codes of resistances, see page 43-45.



Variety technical sheet available.
Please visit <http://usa.vitalisorganic.com/products-and-services/techsheets> or ask your Vitalis representative.

Herbs



Herbs recommended for pot production.

Chives *Allium schoenoprasum*

Nelly



A fine-to-medium thick chive, Nelly is dark blue-green in color, vigorous and upright. It is strongly resistant to diseases and thrip damage, and is used for fresh and industrial markets.

Staro



An extra thick, dark green variety for a broad range of growing purposes, including forcing and pot production. Appropriate for fresh cut and industrial markets.

Cilantro *Coriandrum sativum*

Marino



Thickly feathered leaf cilantro with excellent plant emergence, late bolting and high yielding for open field or greenhouse production.

Dill *Anethum graveolens*

Ella



Ella is an attractive dark green dill variety bred for pot and babyleaf production. Short hypocotyls give it a sturdy upright and compact plant habit.

Green Sleeves

A uniform dark green dill for production of fresh bunches. Green Sleeves is resistant to bolting and is suited for year-round growing in open field and greenhouse production.

Nelly

Staro

Marino

Ella

Green Sleeves

Herbs



Herbs recommended for pot production.



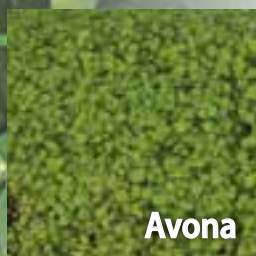
Peione



Fanni



German
Winter



Avona

Parsley, Flat Leaf *Petroselinum crispum*

Gigante d'Italia

A large, flat leaved variety that is a dependable standard—very aromatic and high yielding.

Peione



Peione is a standout Italian large leaf variety with large, glossy, dark green leaves and uniform habit. Vigorous plants are highly productive, with strong regrowth and intermediate resistance to downy mildew. Thick, sturdy stems and upright growth make for easy bunching.

Resistances: IR: Pp.

Sage *Salvia officinalis*

Fanni



A quality sage selection with large leaves, excellent yield and dependable germination. Fanni produces well in open field and greenhouse conditions.

Thyme *Thymus vulgaris*

German Winter

A bushy plant with broad leaves that can be used for open field or greenhouse production of fresh or dried product.

Watercress *Nasturtium officinale*

Avona

This succulent and pungent True Watercress is an excellent addition to babyleaf blends. Adaptable for pot and open field production, and works particularly well as a micro-green.



Resistance Makes the Difference

Cooking is hot, and fresh herbs are part of that trend. In the Western World the demand for live herbs in pots, clamshells and fresh cut bunches has been steadily increasing for many years now. No surprise there, because what could be easier and more satisfying than snipping a fresh bouquet garnish on your own window ledge, balcony or patio? Vitalis supports this development by offering both growers and end users herb varieties that are less susceptible to diseases and have extended shelflife.

Focus on resistance

Around ten years ago we tightened the breeding objectives of several herb varieties to gear them more to the needs of our customers and end users. They want plants with good resistance and year-round homogeneous, reliable production. Therefore, we now actively focus on resistance and quality traits breeding by selecting and crossing specific genetic characteristics that make the plants resistant or less susceptible to common diseases with extended shelf life. Important in the breeding process are resistances to the most common fungal diseases and tolerance of low temperatures in parts of the supply chain. And year-round production and supply are an absolute must for the large, specialist commercial nurseries.

Successful varieties

The focus on genetic resistance and extended shelf life has had the desired effect. In 2016, we officially launched our first Downy Mildew intermediate resistant basil variety on the market with overwhelming success, '**Eleonora**'. Since then, we released another Downy Mildew intermediate resistant basil variety targeted

explicitly for hydroponic production, '**Emma**'. We also commercialized the basil variety '**Elidia**' that is resistant to Fusarium, which can cause root rot. Elidia also produces high yields of large leaves and excellent field standability. For hydroponic growers seeking a variety that has improved tolerance to cold in the supply chain, we offer '**Keira**' basil. Simultaneously, we have introduced parsley varieties with intermediate resistance to Downy Mildew: a large flat-leaf parsley variety with high yields, thick long stems, and a brilliant glossy green color '**Peione**' – perfect for pots or bunch.

Second generation

We refer to them as the herb varieties of the 'second generation': varieties that have an attractive color and good flavor, and at the same time ensure more reliable cultivation and better shelf life, keeping a quality product at the end consumers' homes. These varieties are a bit more forgiving in conditions that are not ideal, which can happen in the sales channel and in consumers' homes.

Quality mark

In the coming years we will continue to steadily expand our range of resistant and tolerant herb varieties for sale in pots, clamshell and bunch. To indicate these second generation herb varieties we developed a quality mark, called '**Resistance Makes the Difference**'. With this quality mark we can indicate these varieties to our customers. In that way they know immediately, which varieties have the special characteristics that will enhance their production and consumption experience.

Resistances

Descriptions, recommendations and illustrations in this catalogue correspond as closely as possible to tests and practical experience. This information is provided to assist professional growers and users; however, variable local conditions must be taken into account. Under no circumstances shall Vitalis Organic Seeds, North America, accept liability based on such information for deviating results in the cultivated product. The Purchaser is responsible for determining whether the items are suitable for the intended cultivation type and location.

Important Resistance Information:

Resistances in varieties of our crops are coded, unless indicated otherwise. See explanation of our coding list at www.vitalisorganic.com. If a variety is resistant to more than one pathogen, the individual resistance codes will be separated by the symbol “/”.

- If in a resistance code of a certain variety reference is made to certain strains for which the resistance is claimed, this means that no resistance is claimed to other strains of the same pathogen.
- If in a resistance code no reference is made to specific strains of the pathogen for which the resistance is claimed, this means that resistance is claimed only generally to the pathogen, and not to specific strains of the pathogen.

Crop	Type	Scientific name pathogen ISF	English name	Code	Races/ Strains	Level of resistance	Remark
Arugula	Viruses	<i>Hyaloperonospora parasitica</i>	Downy mildew	Hp		IR	
Basil	Fungi	<i>Peronospora belbahrii</i>	Downy mildew	Pb		IR	
		<i>Fusarium oxysporum f. sp. basilicum</i>	Fusarium Wilt	Fob		IR	
Cucumber	Viruses	<i>Beet pseudo yellowing virus</i>	Beet pseudo yellowing virus	BPYV		IR	
		<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		IR	
		<i>Cucumber vein yellowing virus</i>	Cucumber vein yellow- wing	CVYV		IR	
		<i>Cucurbit yellow stunting disorder virus</i>	Cucumber yellowing stunting disorder	CYSDV		IR	
		<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV		IR	
		<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV		IR	
		<i>Zucchini yellow mosaic virus</i>	Zucchini yellows	ZYMV		IR	
		<i>Cucumber green mottle mosaic virus</i>	Cucumber green mottle	CGMMV		IR	
	Bacteria	<i>Pseudomonas syringae pv. lachrymans</i>	Angular leaf spot	Psl		IR	
	Fungi	<i>Cladosporium cucumerinum</i>	Scab and gummosis	Ccu		HR	
		<i>Colletotrichum orbiculare</i>	Anthrachnose	Co	1	IR	
		<i>Colletotrichum orbiculare</i>	Anthrachnose	Co	2	IR	
		<i>Colletotrichum orbiculare</i>	Anthrachnose	Co	3	IR	
		<i>Corynespora cassicola</i>	Corynespora blight and target spot	Cca		HR	
		<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	1	IR	
		<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	2	IR	
		<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	3	IR	
		<i>Podosphaera xanthii</i> (ex. <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px		IR	
		<i>Pseudoperonospora cubensis</i>	Downy mildew	Pcu		IR	
Lettuce	Viruses	<i>Lettuce mosaic virus</i>	Lettuce mosaic	LMV	1	IR	LMV:1
		<i>Tomato bushy stunt virus</i>	Lettuce die-back	TBSV		HR	
	Bacteria	<i>Sphingomonas suberifaciens</i> (ex <i>Rhizomonas suberifaciens</i>)	Corky root	Ss		IR	
	Fungi	<i>Bremia lactucae</i>	Downy mildew	Bl	16-36EU	HR	In USA called Bl:1-9US
		<i>Fusarium oxysporum f.sp. lactucae</i>	Fusarium wilt	Fol	1	IR/HR	
		<i>Fusarium oxysporum f.sp. lactucae</i>	Fusarium wilt	Fol	2	IR/HR	
	Insects	<i>Macrosiphum euphorbiae</i>	Potato aphid	Me		IR	
		<i>Nasonovia ribisnigri</i>	Lettuce leaf aphid	Nr	0	HR	
		<i>Pemphigus bursarius</i>	Lettuce root aphid	Pb		HR	
Melon	Viruses	<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		IR	
		<i>Melon Necrotic Spot Virus</i>	Melon necrotic spot	MNSV		HR	
		<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV		IR	
		<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV		IR	
		<i>Zucchini yellow mosaic virus</i>	Zucchini yellows	ZYMV		IR	
	Fungi	<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	0	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	1	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	2	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	1.2	IR	
		<i>Golovinomyces cichoracearum</i> (ex. <i>Erysiphe cichoracearum</i>)	Powdery mildew	Gc	1	IR	
		<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px	1	IR	
		<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px	2	IR	
		<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px	3	IR	
		<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px	5	IR	
		<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px	3.5	IR	
	Insects	<i>Aphis gossypii</i>	Cotton aphid	Ag		IR	

Crop	Type	Scientific name pathogen ISF	English name	Code	Races/ Strains	Level of resistance	Remark
Parsley	Fungi	<i>Septoria petroselini</i>	Septoria blight	Sp		IR	
		<i>Plasmopara petroselini</i>	Downy mildew	Pp		IR	
	Viruses	<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		IR	
Pepper	Viruses	<i>Pepper mottle virus</i>	Pepper mottle	PepMoV		HR	
		<i>Pepper yellow mosaic virus</i>	Pepper yellow mosaic	PepYMV		HR	
		<i>Potato Y virus</i>	Potato Y	PVY	0	HR	PVY:0
		<i>Potato Y virus</i>	Potato Y	PVY	1	HR	PVY:1
		<i>Potato Y virus</i>	Potato Y	PVY	1.2	HR	PVY:2
		<i>Tobacco etch virus</i>	Tobacco etch	TEV		IR	
	Tobamovirus group	<i>Tobamovirus (ToMV, TMV, PMMoV)</i>		Tm	0	HR	Tm:0
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1	HR	Tm:0,1
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1, 1.2	HR	Tm:0-2
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1, 1.2, 1.2.3	HR	Tm:0-3
		<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV	0	IR	
	Bacteria	<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	1	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	2	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	3	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	4	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	5	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	6	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	7	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	8	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	9	HR	
		<i>Xanthomonas campestris pv. vesicatoria</i>	Bacterial spot	Xcv	10	HR	
	Fungi	<i>Phytophthora capsici</i>	Buckeye fruit and root rot	Pc		IR	
		<i>Leveillula taurica</i> (anamorph: <i>Oidiopsis sicula</i>)	Leveillula taurica	Lt		IR	
	Nematode	<i>Meloidogyne arenaria</i>	Root-knot	Ma		IR	Resistance can be adversely affected at elevated soil temperatures (>28°C)
		<i>Meloidogyne incognita</i>	Root-knot	Mi		IR	
		<i>Meloidogyne javanica</i>	Root-knot	Mj		IR	
	Abiotic	<i>Cracking</i>		Cr		T	
		<i>Stip</i>		St		T	
Rootstock, Cucurbit	Fungi	<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	1	HR	
		<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	2	HR	
		<i>Fusarium oxysporum f.sp. cucumerinum</i>	Fusarium wilt	Foc	3	HR	
		<i>Fusarium oxysporum f.sp. radicle-cucumerinum</i>	Fusarium crown and root rot	Forc		IR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	0	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	1	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	2	HR	
		<i>Fusarium oxysporum f.sp. melonis</i>	Fusarium wilt	Fom	1.2	HR	
		<i>Fusarium oxysporum f.sp. niveum</i>	Fusarium wilt	Fon	0	HR	
		<i>Fusarium oxysporum f.sp. niveum</i>	Fusarium wilt	Fon	1	HR	
		<i>Fusarium oxysporum f.sp. niveum</i>	Fusarium wilt	Fon	2	HR	
		<i>Colletotrichum orbiculare</i> (ex <i>Colletotrichum lagenarium</i>)	Anthracnose	Co	1	IR	
		<i>Colletotrichum orbiculare</i> (ex <i>Colletotrichum lagenarium</i>)	Anthracnose	Co	2	IR	
		<i>Colletotrichum orbiculare</i> (ex <i>Colletotrichum lagenarium</i>)"	Anthracnose	Co	3	IR	
		<i>Verticillium dahliae</i>	Verticillium wilt	Vd		IR	
		<i>Verticillium albo-atrum</i>	Verticillium wilt	Va		IR	
		<i>Phomopsis sclerotoides</i>	Black root rot	Ps		HR	
		<i>Rhizoctonia solani</i>	Rhizoctonia root and crown rot	Rs		IR	
	Nematode	<i>Meloidogyne incognita</i>	Root-knot	Mi		IR	
		<i>Meloidogyne javanica</i>	Root-knot	Mj		IR	
Rootstock, Pepper	Tobamovirus group	<i>Tobamovirus (ToMV, TMV, PMMoV)</i>		Tm	0	HR	Tm:0
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1	HR	Tm:0,1
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1, 1.2	HR	Tm:0-2
		<i>Tobamovirus (ToMV, TMV, TMGMV, PMMoV)</i>		Tm	0, 1, 1.2, 1.2.3	HR	Tm:0-3
	Fungi	<i>Phytophthora capsici</i>	Buckeye fruit and root rot	Pc		IR	
	Nematode	<i>Meloidogyne arenaria</i>	Root-knot	Ma		IR	Resistance can be adversely affected at elevated soil temperatures (>28°C)
		<i>Meloidogyne incognita</i>	Root-knot	Mi		IR	
		<i>Meloidogyne javanica</i>	Root-knot	Mj		IR	

HR: High Resistance | IR: Intermediate Resistance | T: Tolerance

High Resistance (HR): Plant varieties that highly restrict the growth and development of the specified pest or pathogen under normal pest or pathogen pressure when compared to susceptible varieties. These plant varieties may, however, exhibit some symptoms or damage under heavy pest or pathogen pressure.

Intermediate Resistance (IR): Plant varieties that restrict the growth and development of the specified pest or pathogen, but may exhibit a greater range of symptoms or damage compared to highly resistant varieties. Intermediate resistant plant varieties will still show less severe symptoms or damage than susceptible plant varieties when grown under similar conditions.

Tolerance (T): The ability of a plant variety to endure abiotic stress without serious consequences for growth, appearance and yield.

Crop	Type	Scientific name pathogen ISF	English name	Code	Races/ Strains	Level of resistance	Remark
Rootstock, Tomato	Viruses	<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	0	HR	
		<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	1	HR	
		<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	2	HR	
		<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV		IR	
	Bacteria	<i>Ralstonia solanacearum</i>	Bacterial wilt	Rs		IR	
	Fungi	<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	A	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	B	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	C	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	D	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	E	HR	
		<i>Fusarium oxysporum f.sp. lycopersici</i>	Fusarium wilt	Fol	0	HR	In USA called Fol:1
		<i>Fusarium oxysporum f.sp. lycopersici</i>	Fusarium wilt	Fol	1	HR	In USA called Fol:2
		<i>Fusarium oxysporum f.sp. lycopersici</i>	Fusarium wilt	Fol	2	HR	In USA called Fol:3
		<i>Fusarium oxysporum f.sp. radicle-lycopersici</i>	Fusarium crown and root rot	For		HR	
		<i>Phytophthora infestans</i>	Late blight	Pi		IR	
		<i>Verticillium dahliae</i>	Verticillium wilt	Vd	0	HR	In USA called Vd:1
		<i>Verticillium albo-atrum</i>	Verticillium wilt	Va	0	HR	In USA called Va:1
		<i>Pyrenochaeta lycopersici</i>	Corky root rot	Pl		IR	
	Nematode	<i>Meloidogyne arenaria</i>	Root-knot	Ma		IR	Resistance can be adversely affected at elevated soil temperatures (>28 °C)
		<i>Meloidogyne incognita</i>	Root-knot	Mi		IR	
		<i>Meloidogyne javanica</i>	Root-knot	Mj		IR	
Spinach	Viruses	<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		HR	
	Fungi	<i>Albugo occidentalis</i>	White rust	Ao		IR	
		<i>Cladosporium variabile</i>	Leaf Spot	Cv		IR	
		<i>Colletotrichum dematium</i>	Anthrachnose	Cd		IR	
		<i>Peronospora farinosa f.sp. spinaciae</i> (ex. <i>Peronospora effusa</i>)	Downy mildew	Pfs	1-17	HR	
Squash, Summer	Viruses	<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		IR	
		<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV		IR	
		<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV		IR	
		<i>Zucchini yellow mosaic virus</i>	Zucchini yellows	ZYMV		IR	
		<i>Squash leaf curl virus</i>	Squash leaf curl	SLCV		IR	
Squash, Winter	Fungi	<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px		IR	
	Viruses	<i>Cucumber mosaic virus</i>	Cucumber mosaic	CMV		IR	
		<i>Papaya ringspot virus</i>	Papaya ringspot	PRSV		IR	
		<i>Watermelon mosaic virus</i>	Watermelon mosaic	WMV		IR	
		<i>Zucchini yellow mosaic virus</i>	Zucchini yellows	ZYMV		IR	
		<i>Squash leaf curl virus</i>	Squash leaf curl	SLCV		IR	
	Fungi	<i>Podosphaeria xanthii</i> (ex <i>Sphaerotheca fuliginea</i>)	Powdery mildew	Px		IR	
Tomato	Viruses	<i>Beet mild curly top virus</i>		BSTCV		HR	
		<i>Beet Severe Curly Top Virus</i>		BSTCV		HR	
		<i>Tomato apex necrotic virus</i>	Tomato apex necrotic virus	ToANV		HR	
		<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	0	HR	
		<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	1	HR	
		<i>Tomato mosaic virus</i>	Tomato mosaic	ToMV	2	HR	
		<i>Tomato spotted wilt virus</i>	Tomato spotted wilt	TSWV		IR	
		<i>Tomato torrado virus</i>	Tomato torrado virus	ToTV		HR	
		<i>Tomato yellow leaf curl virus</i>	Tomato yellow leaf curl	TYLCV		IR	
	Bacteria	<i>Pseudomonas syringae</i> pv. <i>tomato</i>	Bacteria speck	Pst		HR	
		<i>Ralstonia solanacearum</i>	Bacteria wilt	Rs		IR	
		<i>Xanthomonas campestris</i> pv. <i>vesicatoria</i>	Bacteria spot	Xcv		HR	
	Fungi	<i>Alternaria alternata</i> f.sp. <i>lycopersici</i>	Alternaria stem canker	Aal		HR	
		<i>Alternaria solani</i>	Early blight	As		HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	A	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	B	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	C	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	D	HR	
		<i>Fulvia fulva</i> (ex <i>Cladosporium fulvum</i>)	Leaf mold	Ff	E	HR	
		<i>Fusarium oxysporum</i> f.sp. <i>lycopersici</i>	Fusarium wilt	Fol	0	HR	In USA called Fol:1
		<i>Fusarium oxysporum</i> f.sp. <i>lycopersici</i>	Fusarium wilt	Fol	1	HR	In USA called Fol:2
		<i>Fusarium oxysporum</i> f.sp. <i>lycopersici</i>	Fusarium wilt	Fol	2	HR	In USA called Fol:3
		<i>Leveillula taurica</i> (anamorph: <i>Oidiopsis sicula</i>)	Powdery mildew	Lt		HR	
		<i>Oidium neolycopersici</i> (ex <i>Oidium lycopersicum</i>)	Powdery mildew	On		IR	
		<i>Phytophthora infestans</i>	Late blight	Pi		IR	
		<i>Pyrenochaeta lycopersici</i>	Corky root rot	Pl		IR	
		<i>Stemphylium solani</i>	Gray leaf spot	Ss		IR	
		<i>Verticillium dahliae</i>	Verticillium wilt	Vd	0	HR	In USA called Vd:1
		<i>Verticillium albo-atrum</i>	Verticillium wilt	Va	0	HR	In USA called Va:1
	Nematode	<i>Meloidogyne arenaria</i>	Root-knot	Ma		IR	Resistance can be adversely affected at elevated soil temperatures (>28 °C)
		<i>Meloidogyne incognita</i>	Root-knot	Mi		IR	
		<i>Meloidogyne javanica</i>	Root-knot	Mj		IR	
	Abiotic Stress	<i>Silvering</i>		Si		T	
		<i>Blossom End Rot</i>		BER		T	
		<i>Blotching</i>		Bl		T	
		<i>Cracking</i>		Cr		T	

Quality Standards

Crop	Germination Standards Minimum (%)	Seed Count (seeds per pound)			Seed Count (seeds per kilogram)		
Arugula	85	1,134,000	to	2,268,000	2,500,000	to	4,989,500
Basil	85	266,819	to	647,989	587,002	to	1,425,576
Cauliflower	90	103,000	to	123,000	230,720	to	275,520
Chives	85	303,000	to	455,000	666,700	to	1,000,000
Cilantro	85	45,500	to	114,000	100,000	to	250,000
Cucumber	95	11,400	to	21,600	25,000	to	47,500
Dill	80	75,800	to	113,600	166,700	to	250,000
Eggplant	95	82,500	to	126,000	181,500	to	277,200
Endive	90	252,000	to	412,400	554,400	to	907,200
Fennel	90	31,947	to	36,590	70,431	to	80,668
Leek	90	114,000	to	206,200	249,500	to	453,600
Lettuce	95	239,000	to	648,000	525,200	to	1,425,600
Melon	90	11,500	to	20,000	25,760	to	44,800
Onion	90	90,000	to	125,000	198,414	to	275,575
Parsley	85	350,000	to	412,400	769,200	to	907,200
Pepper	95	44,500	to	81,000	97,800	to	178,200
Radish	85	62,400	to	68,500	137,600	to	151,000
Rootstock, Cucurbit	95	2,320	to	3,200	5,120	to	7,120
Rootstock, Pepper	95	44,500	to	81,000	97,800	to	178,200
Rootstock, Tomato	95	108,000	to	267,000	237,600	to	587,000
Sage	70	42,000	to	52,000	92,593	to	114,639
Spinach	85	29,000	to	81,000	63,200	to	178,200
Summer Squash	95	2,500	to	4,700	5,500	to	10,400
Thyme	80	42,000	to	2,200,000	2,645,520	to	4,850,120
Tomato	95	108,000	to	267,000	237,600	to	587,000
Watercress	80	42,000	to	2,300,000	3,968,280	to	5,070,580
Winter Squash	90	1,400	to	2,700	3,000	to	5,900

Enza Zaden USA, Inc.



Rodolfo Leyva
*Regional Sales Director,
 North America*
T +1 855-800-ENZA (3692)
E r.leyva@enzazaden.com



Ian Botes
National Sales Manager, USA
T +1 855-800-ENZA (3692)
E i.botes@enzazaden.com



Jean-Francois Thomin
Marketing Manager
T +1 831-998-2248
E j.thomin@enzazaden.com



Kazue Leon Nakashima
Logistics Supervisor
T +1 855-800-ENZA (3692)
E k.leonnakashima@enzazaden.com

Customer Service



Sara Garcia
Customer Service Supervisor
T +1 855-800-ENZA (3692)
E s.garcia@enzazaden.com



Karla Flores
Customer Service Representative
T +1 855-800-ENZA (3692)
E k.flores@enzazaden.com



Angela Hernandez
Customer Service Representative
T +1 855-800-ENZA (3692)
E a.hernandez@enzazaden.com




Alex Mendoza
Customer Service Representative
T +1 855-800-ENZA (3692)
E a.mendoza@enzazaden.com

Terms & Conditions of Sale:

The general Terms & Conditions of Enza Zaden USA, Inc. apply to all contracts entered into by Vitalis Organic Seeds. The general Terms & Conditions are available from each authorized Enza Zaden USA and Vitalis Organic Seeds distributor upon request and can be seen at www.vitalisorganic.com.

Vitalis Organic Seeds, North America

Locate the Sales Representative in your region using the colored 



Erica Renaud
Regional Business Manager,
Vitalis & Herbs North America
T +1 831-262-7635
E e.renaud@enzazaden.com



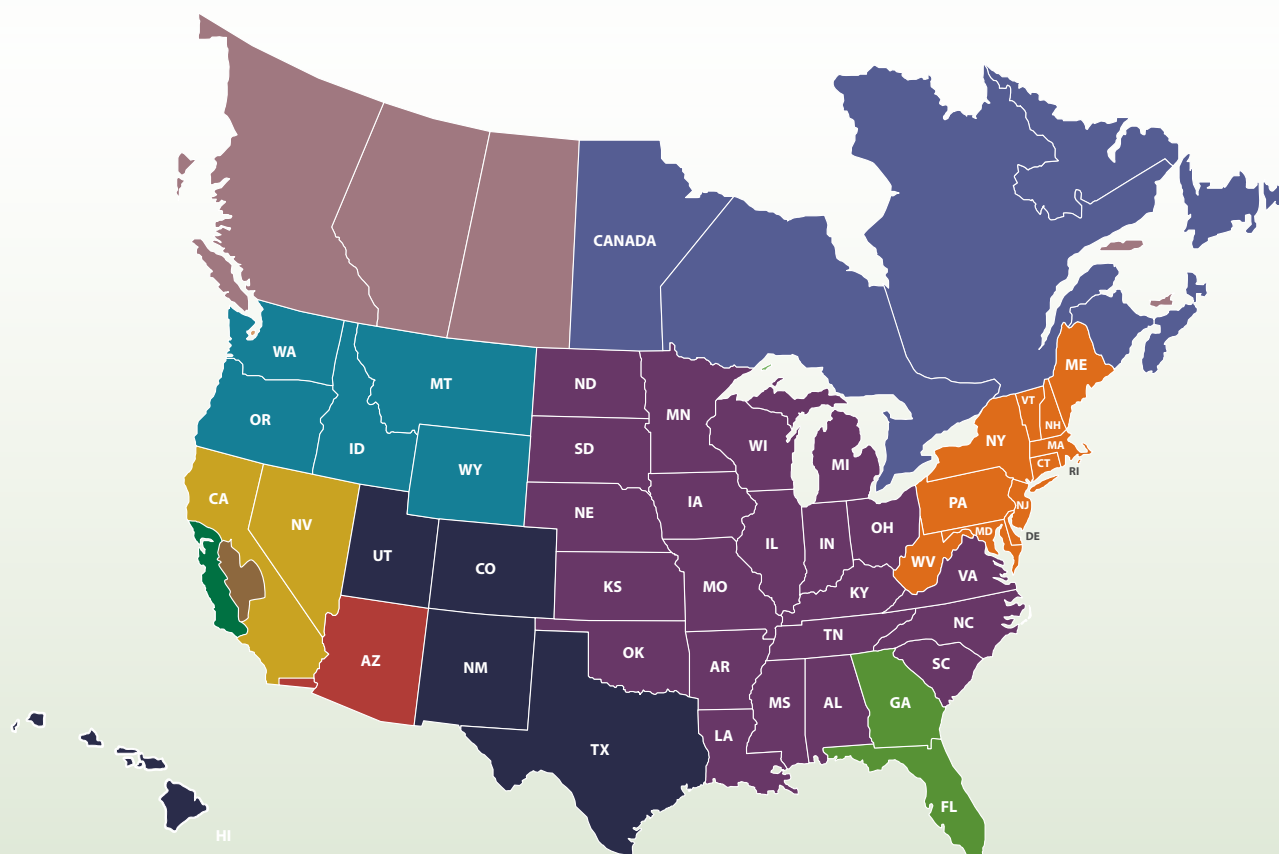
Amy Kaplan    
Sr. Organic Product Specialist,
California/Southwest US
T +1 831-998-1413
E a.kaplan@enzazaden.com



Shaina Bronstein  
Organic Sales Representative,
Northwest US/Western Canada
T +1 831-737-0525
E s.bronstein@enzazaden.com



Adrienne Shelton   
Organic Product Specialist,
Northeast/Midwest US
T +1 703-231-5377
E a.shelton@enzazaden.com



Our organic seeds are distributed through select distributors throughout North America. A list of our distributors can be found at www.vitalisorganic.com or by contacting our Customer Service Department toll-free at **1-855-800-ENZA (3692)**.

Regional Sales Representatives

Western US



Pine Higgins 🌻 🌿 🌻 🌿
Area Sales Manager
T +1 831-206-6192
E p.higgins@enzazaden.com



Nick Barnes 🌿
Key Customer Manager
T +1 831-455-6273
E n.barnes@enzazaden.com



Jeff Ramirez 🌿 🌻
Product Specialist, Southwest US
T +1 831-682-5622
E j.ramirez@enzazaden.com



Tim Fellom 🌿 🌻
Sr. Sales Representative
T +1 831-595-0824
E t.fellom@enzazaden.com



Emmanuel Alcantar 🌿 🌻
Sales Representative,
High Density Crops
T +1 831-998-1033
E e.alcantar@enzazaden.com



Michael Gall 🌻 🌿
Sales Representative, High Density Crops
T +1 831-206-1108
E m.gall@enzazaden.com



Nick Harlow 🌻 🌿 🌻
Sales Representative, California
T +1 805-264-5551
E n.harlow@enzazaden.com



Erik Scarr 🌻 🌿 🌻
Product Specialist
T +1 831-682-6809
E e.scarr@enzazaden.com



Rene Emch 🌿 🌿
Sr. Product Specialist,
Pacific Northwest
T +1 657-276-1021
E r.emch@enzazaden.com



Natalie Vargo 🌿
Product Specialist, Lettuce
T +1 831-320-7885
E n.vargo@enzazaden.com



Javier Russek 🌻 🌻 🌿
Sr. Product Specialist, Onions
T +1 831-240-5736
E j.russek@enzazaden.com



Cristal Cisneros 🌻 🌿 🌻
Product Specialist
T +1 831-682-5872
E c.cisneros@enzazaden.com



Antonio Valdez 🌿 🌻
Trial Specialist, Southwest US
T +1 928-323-2679
E a.valdez@enzazaden.com



Daniel Gerardo 🌿 🌻
Trial Technician, Southwest US
T +1 928-366-0057
E d.gerardo@enzazaden.com

Regional Sales Representatives

Eastern US & Canada



Rod Jorgensen 🌱 🌸 🌻
Area Sales Manager
T +1 407-389-9411
E r.jorgensen@enzazaden.com



Dominic Bouchard 🌱 🌸 🌻
Area Sales Manager
T +1 518-390-2837
E d.bouchard@enzazaden.com



Butch Brady 🌱 🌸
Sr. Sales Representative
T +1 941-769-7374
E g.brady@enzazaden.com



Justin Lanier 🌱 🌸
Product Specialist
T +1 941-702-0928
E j.lanier@enzazaden.com



Andrew Ditsworth 🌱 🌸
Sales Representative
T +1 941-720-0904
E a.ditsworth@enzazaden.com



Lamar Jahna 🌱 🌸
Product Specialist
T +1 863-444-2745
E l.jahna@enzazaden.com



Bryan Stuart 🌸
Sales Representative,
Eastern Canada Open Field
T +1 519-808-3090
E b.stuart@enzazaden.com

Greenhouse Business, US & Canada



Freek Knol
Regional Manager,
Greenhouse Business North America
T +1 303-319-0057
E f.knol@enzazaden.com



Arden Nywening 🌸
Area Sales Manager,
Greenhouse Eastern Canada
T +1 229-688-8353
E a.nywening@enzazaden.com



Lee Parsons 🌸
Sr. Sales Representative,
Greenhouse Western Canada
T +1 604-376-4989
E l.parsons@enzazaden.com



Roberto Haveroth 🌸
Sales Representative,
Greenhouse Ontario Canada
T +1 519-324-5761
E r.haveroth@enzazaden.com

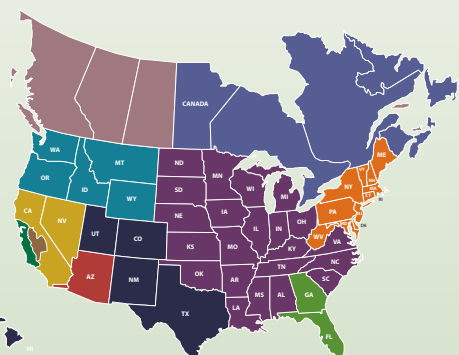


Kees Rodenburg
Sr. Sales Representative,
Greenhouse US
T +1 520-686-1432
E k.rodenburg@enzazaden.com



Julia Winkeler
Product Specialist, Greenhouse US
T +1 831-262-5989
E j.winkeler@enzazaden.com

Locate the Sales Representative in your region using the colored 🌸



US Main Office

7 Harris Place
Salinas, CA 93901
USA
T +1 855-800-ENZA (3692)
T +1 831-753-6141
F +1 831-754-2975
E customer.service@enzazaden.com

Netherlands Main Office

Vitalis Biologische Zaden
Hengelderweg 6
NL 7383 RG Voorst
The Netherlands
T +1 31 (0)575-502-648
W www.vitalisorganic.com



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