



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ



Inovace studijních programů AF a ZF MENDELU směřující k vytvoření mezioborové integrace CZ.1.07/2.2.00/28.0302

Tato prezentace je spolufinancovaná z Evropského sociálního fondu a státního rozpočtu České republiky



Salad and leaf vegetables

Head lettuce (*Lactuca sativa* L. var. capitata)

Low requirements, frost-resistant, up to -4°C

Optimum temperature: 12-18°C Nutritional value of

92-95% water

0.71% fibre

1.5% protein

1.1% dietary minerals: K, P, Ca, Mg, Fe

- Vitamin C: 80 mg

- provit. A: 5.5 mg

- Vitamin B1 and B2: 3 mg/1,000 g

Malic acid, citric acid, oxalic acid

Asparagine, lactucin (bitter substance)

Small-head lettuce 100-120 g

Heads used to be cultivated to weigh 100-120 g

Sorted on the field for harvest, small heads are left to develop fully – expensive method, when the head are clean, half the mass is gone

Large-head lettuce 300-400 g

Reasonable growers grow large-head lettuces: twice as much mass within same period of time

Single harvest; if one lettuce head on the field weighs more than 300 g, all plants are harvested with ASALIFT machines



Forced lettuce

10-12°C is enough for forcing

Plastic greenhouses, semi-heated greenhouses, and un-heated greenhouses; heated hot-beds

End of February till early March

100 g for 1st grade quality

Growing does not pay, lettuce is imported

SMARAGD

Semi-heated greenhouses and plastic greenhouses, 10°C is enough TYRKYS

Heated forcing, requires min. 15°C

Light-green

1 - 25

Hardier leaves

CITRIN

Greenhouse

E

5

Smooth

Dim-green

1 - 25

Stiff leaf, small outer leaves

NEFERIN

Unheated greenhouse and plastic
greenhouse

E

7

Smooth

Green

1 - 25

Hardier leaves, upright

SAFÍR

Unheated greenhouse and plastic
greenhouse

E

6

BREMEX

Greenhouse, early lettuce

Medium-sized heads, same size, firm and well-packed

High resistance to bolting

Resistant to lettuce mould: BL1-25

Single harvest

•BL - *Bremia lactusa*e



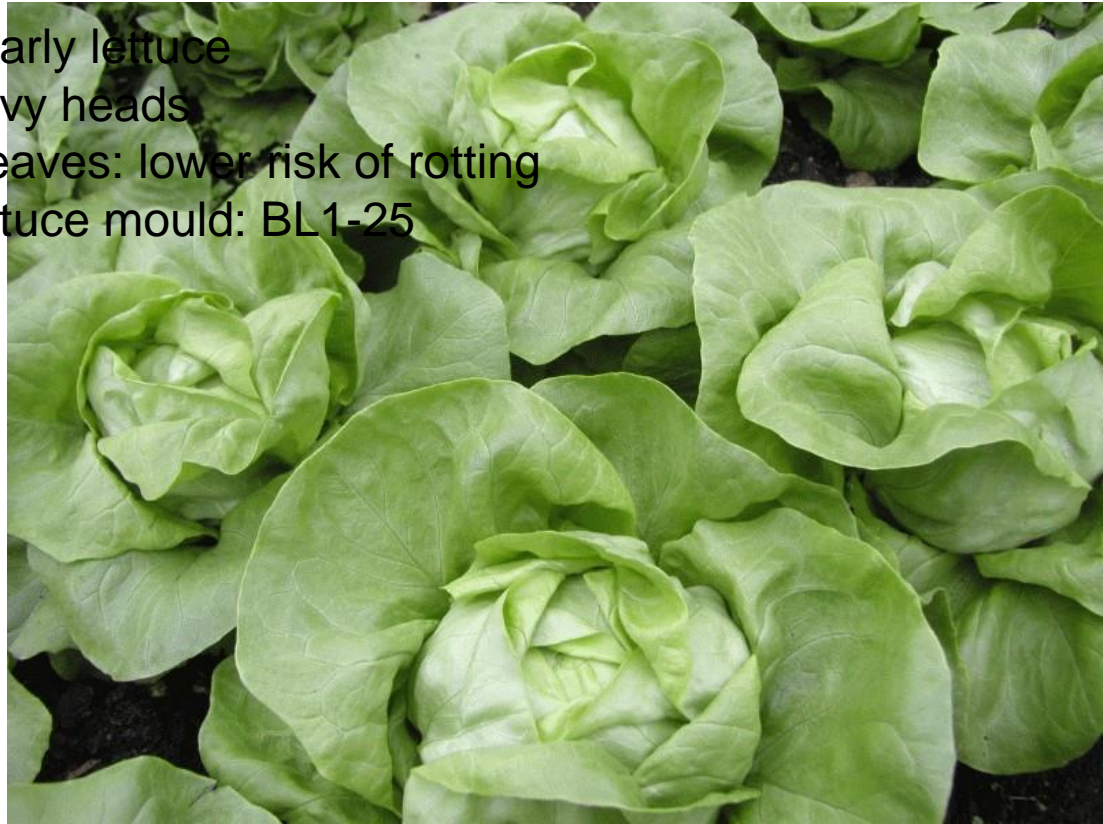
CITRIN

Greenhouse, early lettuce

Medium to heavy heads

Upright outer leaves: lower risk of rotting

Resistant to lettuce mould: BL1-25



CEZAROS

Greenhouse, medium-early lettuce

Large, heavy heads

Upright outer leaves: lower risk of rotting

Resistant to lettuce mould: BL1-25

Good for harsh conditions (unheated forcing)



Field-grown lettuce for spring and autumn
harvest (large-head lettuce)

Spring varieties

Spring and autumn harvest

Harvested by 15 May or grown in the
autumn

Not suitable for long summer days: bolting

DEON

Early variety of field-grown lettuce

Spring and autumn harvest

Medium-sized heads

Smooth, light-green leaves

•BL 1, 3, 6-13, 17-25

Fast-growing variety

Cultivated for growing under non-woven fabric which may be removed late in the season



MAJOR

Early field-grown lettuce

Spring and autumn harvest

•BL 1-4, 6-15, 17-25

More dense spacing

Grown under non-woven fabric



MARATON

Early field-grown lettuce

Spring planting as well as autumn growing

(July sowing)

•BL 1-4, 6-25

Large, yellow-green heads

Blistered leaves

Excellent flavour



AMUR

Medium-early, 65-75 days

Good for spring and autumn outdoor growing

Large, firm, round, well-packed head

Resistant to lettuce mould: BL 1-7, 10, 12, 18, 20, 23



Slightly blistered

Reddish

1, 3, 8, 9, 11 - 13, 17, 18, 19, 21 - 25

No bolting

FARAON

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ME

8

Slightly blistered

Light-green

1, 3, 6, 8, 9, 11 - 14, 16 - 25

Heavy heads

MARATON

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ME

9

Blistered

Yellow-green

1 - 4, 6 - 25

No bolting

MARŠALUS

Field-grown lettuce for all-year round harvest (large-head lettuce):

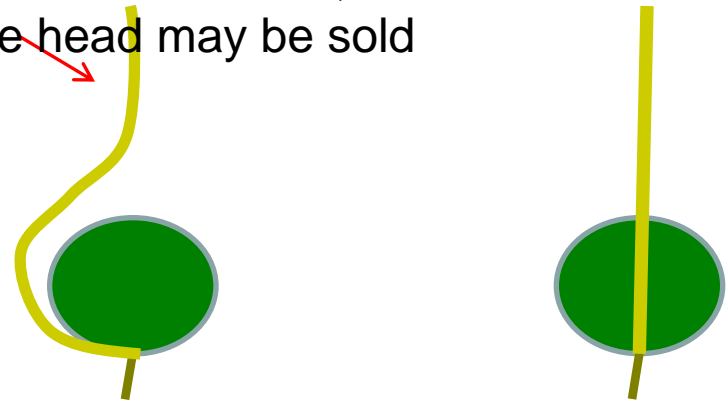
Forms a head, may be left on field for 10-14 days without risk of bolting or cracking
Early lettuces crack the earliest
4-day delay: bolting

ACTION

Foreign expensive seedstock

Bolting: growing tip surpasses the head, may be chipped, and the head may be sold as usual

Common varieties



MARS

Earliest field-grown variety

UNI: all-year round growing: plantings and sowings

Mid-size heads

Resistant to lettuce mould: BL 1-21, 23-25

Excellent tolerance to cold weather in spring and autumn



MARŠALUS

Early variety

UNI: Good for all-year growing

Large, light-green heads, hardier leaves

Resistant to lettuce mould: BL 1 - 14, 17 - 21, 23 - 25

Great resistance to head overheating,
good for growing in hot summer season



MERKURION

Medium early

UNI: versatile variety, all-year round growing

Excellent: large head

Resistant to lettuce mould: BL 1-24

Tolerates cold as well as high temperatures

Excellent health



ČERVÁNEK

Red-head, early field-grown lettuce

UNI: spring, summer, and autumn growing
from plantings and direct sowing

Firm, heavy mid-size heads

•BL 1, 3, 8, 9, 11-13, 17, 18, 19, 21-25

Tolerates early spring growing under non-woven fabric

Spacing: 25 x 25-30 cm

Germans like red heads, Czechs like green heads



ADINAL

Medium-early, veget. period: 65-75 days

UNI: Good for all-year growing

Round, mid-size heads

Tolerates short-term storage after harvest

Resistant to lettuce mould: BL 1-25

Spacing: 30 x 25 cm



LENTO

Medium-early, 63-75 days

UNI: Good for all-year round growing from direct sowing

Large, dark, round, firm, well-packed head

No rotting (leaves overlap), good health

•BL1-7, 10, 12, 13, 14, 17, 18, 22, 24, partially 21



SAHIM

Medium-early, 63-73 days

UNI: Good for all-year growing

Medium, round to flat round head

Brown-red outer leaves

Cut heads are light yellow-green on the inside

•BL 16 and 22

Spacing: 30 x 25 cm



Not recommended: KRÁL MÁJE
VELTRUSKÝ MÁJ (name = harvest)

Small heads

Harvest: early May

Late harvest: bolting DĚTENICKÁ
ATRAKCE

Very old variety, green, no bolting
Small head 200-300 g



Field-grown summer lettuce (large heads):

Summer lettuce is not grown much in CR, growers are afraid it will not sell (fruit-bearing vegetables for salads are available at that time: tomatoes, cucumbers, etc.)

JUPITER: most grown, large head: 250-400 g SATURN LARAND PIRÁT,

ČERVENÁČEK: read, not grown much, turns brown-purple when processed, must be prepared and eaten quickly

Field-grown lettuce for wintering

Sowing: 20 August till 20 September

Thin out for 25 x 25 cm spacing so that it develops roots before winter

Build fences, non-woven fabric (birds, game, ravens)

Grown heads are harvested in 1st decade of May (Lednice: lettuce sold at the main square for 10 CZK per head, 100,000 heads per ha)

Hard frost, -20°C : lettuce freezes out



HUMIL

Winters under non-woven fabric

Best variety, great flavour

Mid-size head (200 g), semi-silky, fine leaf

Outer leaves are upright – no rotting

Sowing: end of August, early September

from plantings: by first week in October

harvest: end of April



LEDNICKÝ

Heavy soils: bad wintering

150-200g head

Hardier leaves

ALTENBURSKÝ

Best-wintering variety

120g heads

Hardy, leathery leaves: bad for
consumption

Iceberg lettuce (*Lactuca sativa* L. var. capitata nidus Jaggeri Helm)
Glassy leaves, transported with crashed ice in the US

500-700g heads (even 1-2kg heads)

No bolting, indifferent to day length

Use: fresh salads, great flavour, wilts slowly

Minimum cultivation in CR, more used worldwide

1st grade above 300 g: 500-600g heads are ideal for harvest

Susceptible to tipburn: core is rusty instead of yellow

Physiological defect: reaction to stress

Optimum harvest: 500-600g heads

Do not leave plants grow to 1 kg and more: chances of tipburn are high



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VE

7

Smooth

Dim-green

1, 2, 4-12, 21, 24, 25

Small, firm heads

LEDAN

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E

9

Slightly blistered

Yellow-green

2 - 3, 7-13, 17-18, 21-25

Yellow-green leaf

MEDIMO

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ME

9

Slightly blistered

MINIKO

VE Iceberg lettuce

UNI:

Smaller, but firm compact heads with small
outer leaves

•BL 1, 2, 4-12, 21, 24, 25

No resistance to tipburn

Spacing: 25 x 25 cm



LEDAN

Very early variety

Spring and autumn harvest

Brittle leaves, atypical yellow-green colour

Substitute for butterheads



MEDIMO

Medium-early Iceberg lettuce

UNI

Large heads

Resistance to head overheating and rotting

•BL 2, 4, 7, 12, 13, 17, 21



TRAPER

Medium-early variety of Iceberg lettuce,
75-85 days

UNI: Spring, early summer and autumn
outdoor growing

Large, firm, dense and heavy head with
wavy outer leaves

•BL 1-7, 17, partially 12

Spacing: 30 x 30 cm



LARSEN

Medium-early variety, 80 days

UNI: Good for all-year growing

Medium-large to large heads, well-packed

Resistant to lettuce mould: BL 1-17, 20,
partially 22

Spacing: 30 x 30 cm



MAXIMO

Medium-late Iceberg lettuce

UNI

Robust, looser heads; easy separation of leaves after the plant is cut

•BL 1, 2, 4, 7-12, 14, 17, 18, 21, 25

Sowing: March till the end of June

Spacing: 40 x 40 cm



MAUGLI

Medium-late variety, 77-87 days

UNI: Good for all-year growing

Large, dark-green, firm and heavy head,
fully covered with leaves

Resistant to lettuce mould: BL 1-5, 15,
partially: 6, 7, 12, 17, and 22

Spacing: 30 x 30 cm



TARZAN

Medium-late variety, 80-90 days

UNI: Field-growing, direct sowing of plantings

Large to very large, firm, well-packed and compact head, up to 1 kg

Extraordinary resistance to bolting: allows for multiple harvesting

Sowing: end of March till mid-June



PRAŽAN

Tends to bolt, must be harvested in time

Resistant to lettuce mould

KRYSTAL

Do not grow: small heads

Susceptible to tipburn and mould



Foreign varieties

Relatively resistant to tipburn

EMBRACE SALADIN SANTIS MARIUS

ROXETTE – red-purple, turns brown, must
be prepared right before consumption

Ledový salát Resistance to tipburn

odrůda	červen			srpen		
	prům. hmotnost hlávky v g	výnos t. ha ⁻¹	% vnitř. hnědnutí	prům. hmotnost hlávky v g	výnos t. ha ⁻¹	% vnitř. hnědnutí
Amulet	850	48,10	**	900	49,14	***
Talisman	810	46,53	**	850	48,92	**
Saladin	630	39,64	*	650	40,13	*
Santis	690	42,17	*	630	37,28	0
Zodiac	920	52,64	**	950	51,68	***
Tasna	770	44,32	*	810	47,23	*
Marius	680	39,85	*	730	45,06	**
Kelvin	710	41,22	***	725	44,55	****
Rocco	590	33,95	**	650	34,32	***
Court	620	38,17	***	640	39,12	***
Embrace	680	40,06	*	720	42,54	*
Pražan	550	34,16	*	610	38,32	*
Krystal	450	26,58	***	390	24,03	***
Nabucco	720	45,19	**	660	39,14	**
Crispino	800	47,33	***	830	48,92	****
Robinson	780	45,26	***	710	42,35	***
Roxette	720	44,92	0	730	45,17	*

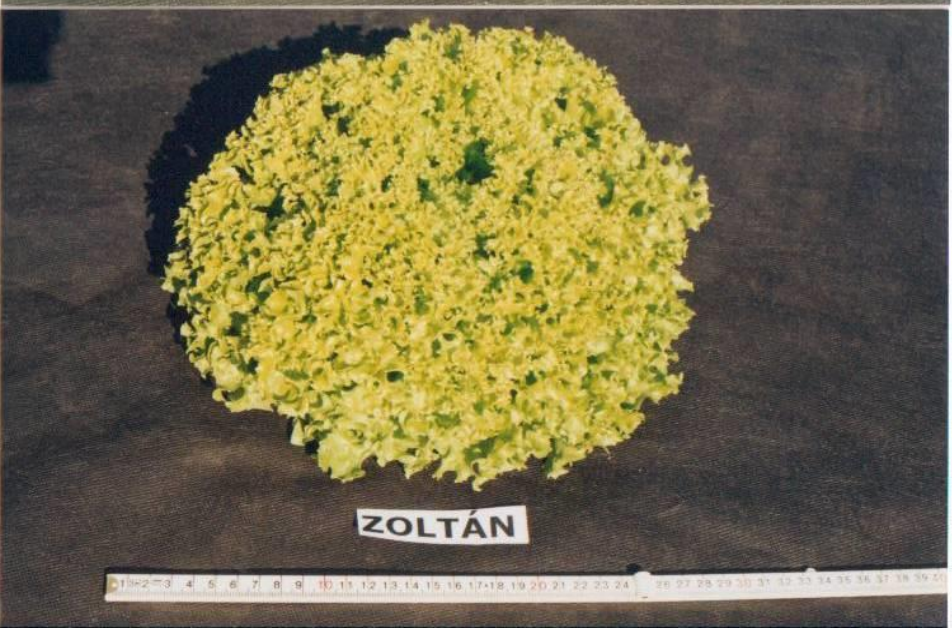
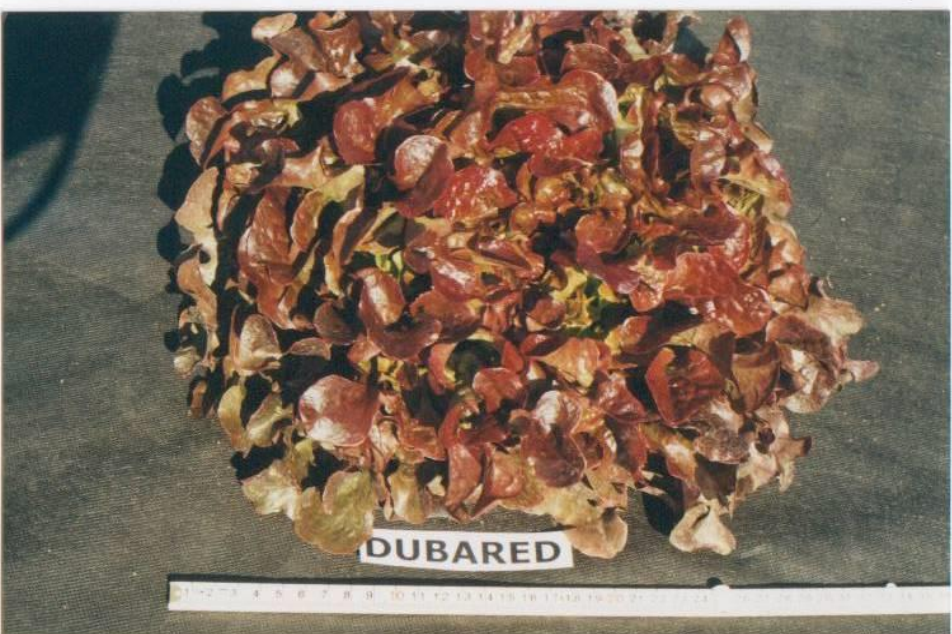
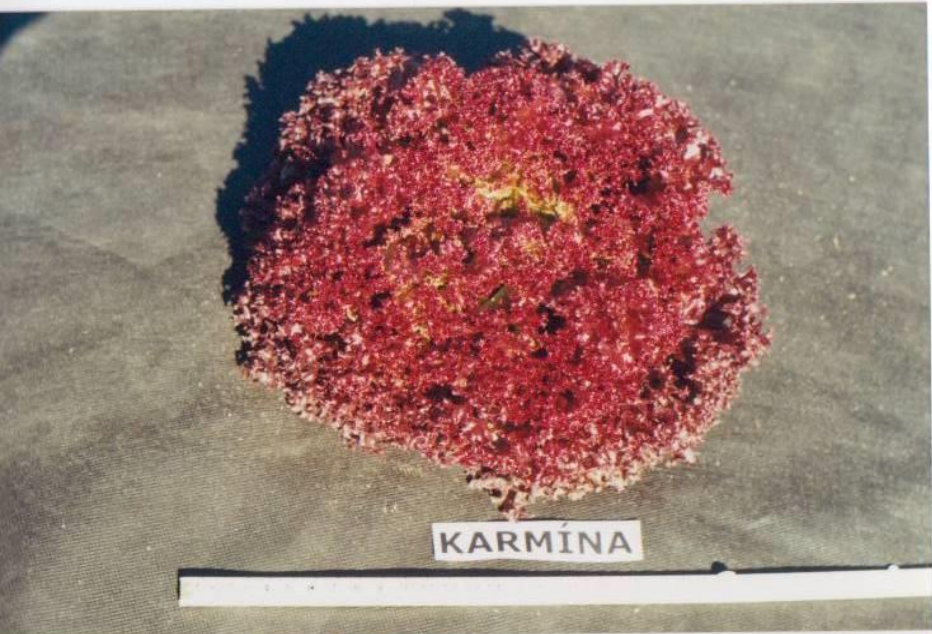
0	bez hnědnutí
*	do 10 %
**	do 26 %
***	do 30 %
****	40 a více %

MAXIMO	855	47,22	*	790	42,18	**
MINIKO	460	34,16	**	530	30,04	**

Leaf lettuce (*Lactuca sativa* L. var. *crispa*)
No head, rosette of curly leaves instead
Direct consumption: vegetable salads, dish
decorations
Rich in fibre
Anti-oxidation substances (anticancer
effect)
Cannot be stored (24 h only)
Attractive for hotels, fast-food chains (Mc
Donald)
Used for buffets: colourful dishes (500
heads delivered weekly for 10 CZK per
head)
Comes from Italy: Lollo rosa, Lollo biondo;
today: many Czech varieties



2 leaf types: dissected and curly



Dark red
slightly curly, LOLLO
ROSAURA

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6

Reddish
slightly curly, LOLLO
ZLATAVA

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Yellow-green
slightly curly, LOLLO
DUBARED

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7

Red

Smooth, dissected, DUBÁČEK

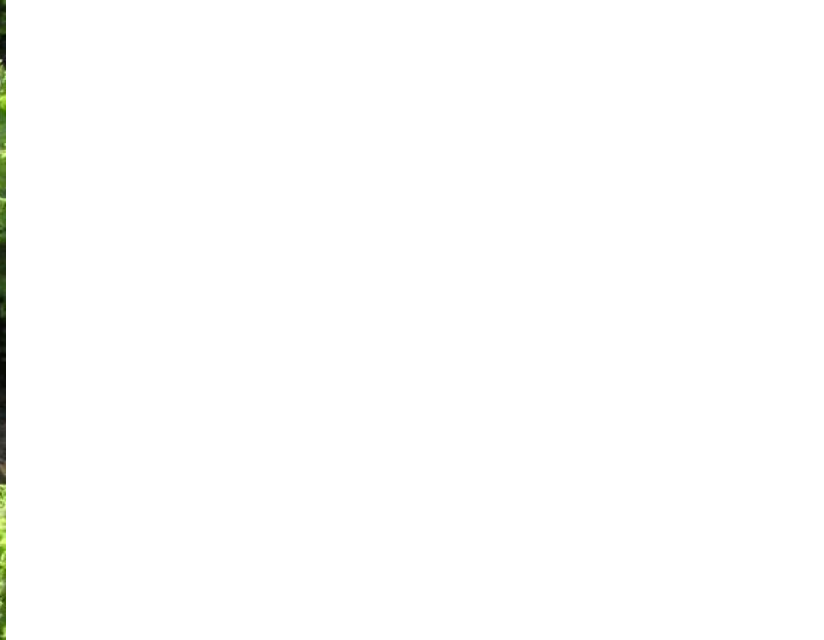
ROSET

Contractual cultivation, small land area, for buffets





Zoltán



Dubagold

REDIN

50-55 days from sowing

Red, dissected leaves

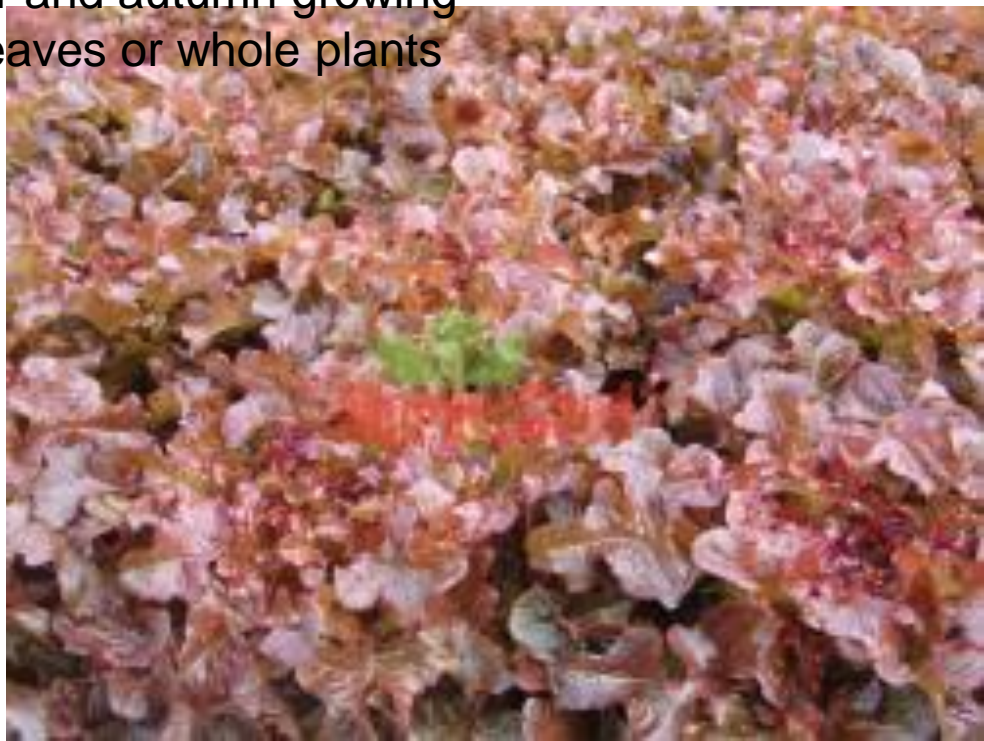
UNI: Spring, summer and autumn growing

Harvest: individual leaves or whole plants

Resistant to bolting

Spacing: 30 x 30 cm

MORAVOSEED



ROSELA

Veget. period: 50-55 days

Red, very blistered and curly leaves

UNI: Good for all-year growing

Harvest: individual leaves or whole plants

Spacing: 30 x 30 cm



DUBÁČEK

50-55 days from sowing

Green, dissected leaves

UNI: Spring, summer and autumn growing

Rosette with light-green, very dissected leaves

Spacing: 30 x 30 cm



ROBIN: curly, dark green-red
ROSET: curly, light red
ZOLTÁN: curly, light-green
KARMÍNA: slightly curly, dark green
ROSAURA: curly, reddish, good for leisure
gardeners; mixture of seeds: Semo
Smržice



Romaine lettuce (*Lactuca sativa* L. var. *longifolia* Lam.)

Direct consumption as well as thermal processing

Robust root system

Distinct veins on entire leaves

High head: 30-40 cm

Head weight: 300-700 g

Sowing: March - April

Planting: April - May

Harvest: July - August

Open, conical heads

Wilts quickly: only for leisure gardeners

Worse quality: Beijing cabbage and

Iceberg lettuce are better



GLOBUS

Spring and autumn growing

Very large round head with loose leaves
(good for restaurants, etc.)

•BL 1, 2, 5 -12, 16, 21, 24, 25

Spacing: 40 x 40 cm at least



GELBUS

First Czech Romaine lettuce variety

UNI: all-year round growing

Large, barrel-like heads, light to yellow-green (compared to dark-green foreign varieties)

Resistant to 25 types of lettuce mould

GELBAN GALANDER



Endive (*Cichorium endivia* L.)
Growing requirements similar to lettuce
Leaf rosette, 200-500 g
Tolerates -5°C
Rich in chlorophyll, natural disinfection
Bitter inulin, supports digestion
Low requirements on growing, winters
easily, big harvest in spring
Hardier leaves, easy to digest
Good nutritional composition



- 2 types of endive *Cichorium endivia* L. :
- var. *crispum*: curly form, leaves are fully shaped, as if cut
- var. *eskariol*: entire, more robust leaves



var. crispum



var. eskariol

Nutritional value

Water 89 %

Fibre 2 %

Carbohydrates 4 %

Protein 1.3 %

Lipids 0.2 %

Dietary minerals 1 %: K (3,800 mg), Ca (800 mg), Fe (14 mg)

Vitamin C: 100-200 mg

•Provitamin A: 12 mg

Intybin and inulin



Varieties Non-curly leaves ESKARIOL
ZELENÝ – only variety grown in CR Curly
leaves, foreign: MARKANT STRATEGO
EROS Bitter flavour due to intybin: water-
soluble, soak in salty water for 10-15 min,
concentrations drop to half, repeat once
more, no intybin

Beijing cabbage *Brasica rapa* var.
pekinensis L.

Short vegetation period: 90 days

Firm, loose head - *pekinensis* var.: barrel-
like shape, packed, the best cylindrical var.:
cigar-like shape, poorly packed laxa var.:
unpacked head



Nutritional value

Dry matter: 5 %

Protein: 1 % (AMA lysin)

Carbohydrates: 1,0-1,6 %

Fibre: 1,6 %

Dietary minerals: K (2,000 mg), P (550 mg), Ca (430 mg), Mg (110 mg), Fe (6 mg)

- Vitamin C: 350 mg

- Provitamin A: 0.7 mg

Group B vitamins

Low concentrations of nitrates

Varieties Good quality foreign varieties
Sowing in July: OPTIKO YAMIKO HANKO
TARANKO NAGAOKA 50
UNI: also for spring growing: MANOKO
MIRAKO KABOKO NIKKO ASTEN
Varieties for sowing from 1-15 July
3-4month storability, until January or mid-
February
No bolting; sowing: end of January till 15
February, planting: end of March, ready in
May
Stored plants: 100% weight, after dispatch
from storage at the end of January: 80%
weight, great, only vapour
- Cheaper seedstock



CAPITOL F1

Veget. period: 58-65 days

Autumn growing

Large, medium-green head, well packed,
1.5-2 kg

Sowing: from mid-July

Spacing: 30 x 20 cm



BRISTOL

Early variety, 58-65 days from sowing

Autumn growing

Wide, elliptic heads, well packed, firm, 1.5-1.8 kg

Highly resistant to bolting

Spacing: 30 x 20 cm

Large amount of biomass within 2 months



HILTON

Veget. period: 58-65 days

Autumn growing

Medium-large head (1 kg), barrel-shaped,
light-green, well packed

Good internal structure

Storability: 4 months



CONCORD F1

Medium late variety, 68 days

Autumn growing

Large, columnar, firm, well packed head,
1.5-2 kg

Long-term storage: 3-4 months, until mid-
February (after that, head start to bolt and
crack, nothing can reverse this (-1°C),
physiologically impossible)

High tolerance to alternaria leaf blight



Not recommended: GRANÁT

Cigar-shaped, open heads

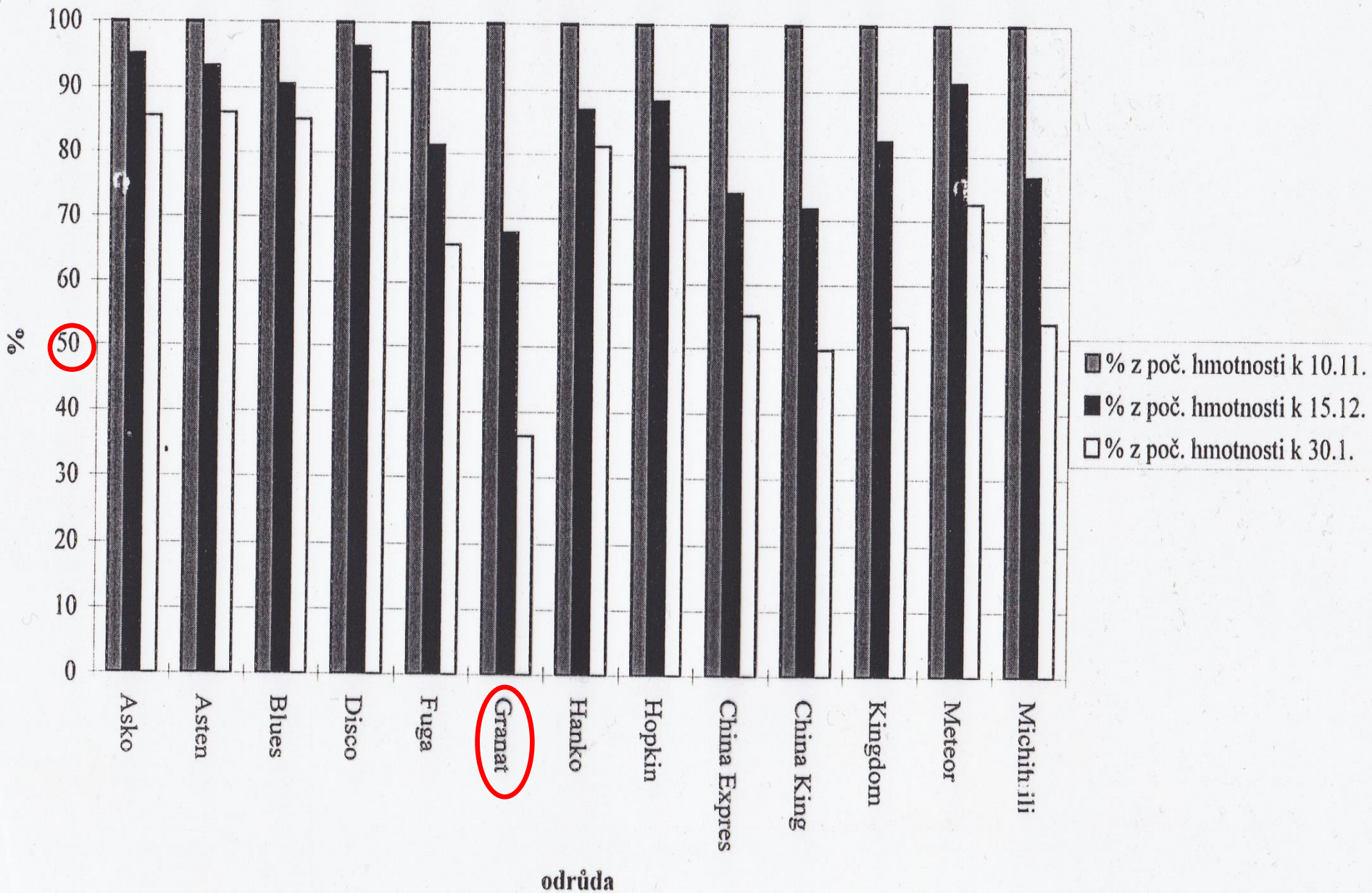
Not fit for storage NOZAKI

Not fit for storage Besides NOZAKI and GRANÁT, other varieties may be stored for 3-4 months, until the end of Jan. or mid-Feb.

Stored plants: 100% weight, after dispatch at the end of Jan.: only 36% weight, very bad, rotten



Pekingské zelí - procentické ztráty během skladování



Chinese cabbage *Brassica rapa* var.
chinensis Juslen

Short vegetation period: 60 days

Milder flavour than Beijing cabbage

Twice as much vit. C than Beijing cabbage,
highest concentrations of vit. C altogether

Not fit for storage, does not form a head

Direct consumption only Nutritional value

Dry matter: 5 %

Protein: 1.2 % (AMA lysin)

Carbohydrates: 1,1 %

Fibre: 1,76 %



2 main types of Chinese cabbage

Rosularis

0.5kg upright leaf rosette

Dark-green blades for spinach preparation:
more chlorophyll

Short petioles

Low in oxalic acid

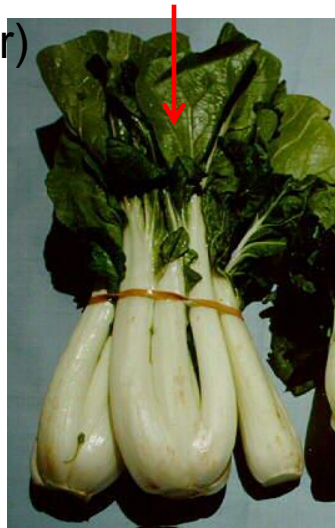


Chinensis

Upright leaves

2 types of leaves: entire (Boken) and curly
(Sobi)

Good for spinach (light colour)



OGI

Early variety, 64 days from sowing

Direct consumption of dark-green, slightly petiolar leaves

Petioles good for fresh leaf salads and preparation of spinach-like dishes

Highly resistant to bolting

Sowing: from mid-June



PAKET

Very early variety, 45-55 days

Medium-high to high plant

Upright, large, egg-shaped, dark-green,
shiny, and slightly blistered leaves

White, medium-long, medium-wide petioles



SOBI

Very early variety, 55 days

Direct consumption of highly curly, yellow-green leaves with distinct petioles

Leaves with petioles are suitable for preparation of fresh leaf salads and thermal processing

More dense sowing (20-25 per m²) for early picking of young, delicate leaves

No bolting

Sowing: 15 June till the beginning of August

Best-flavoured variety

Most vit. C



BOKKEN

Early variety, 67 days from sowing

Direct consumption of white petioles and dark-green leaves

Petioles good for fresh leaf salads and cooking

Dense sowing for picking of young, delicate leaves

Sowing: from 10 June

Highest yield



Celery *Apium agraveolens* var. dulce
White or yellowish petioles: 30-40 cm long
Not grown in CR, imported
Small taproot, not for consumption
3-4 times higher nutritional value than
celeriac
Rich in vit. C: 700 mg / 1,000 g
Rich in fibre: 2,4 %
Apiin, furanocoumarines
Good aromatic substances for salads



NUGET

Early variety, 70-80 days from planting

Light yellow-green leaves, strong, brittle, upright petioles

Spacing: 30-35 x 30 cm



MALACHIT

Medium early, 75-85 days from planting

Medium-high variety

Strong, fleshy, long and bright petioles

Spacing: 40 x 35-40



AVALON GOLDEN SPARTAN TALL UTAH

All varieties are grown abroad

No producer of celery in CR

Growers are afraid of low yield

Plants weight about 2 kg

1kg taproot + 1kg above-ground part

Producers are afraid of losing money

No one is going to look for customers for them

France: celery salads are common



Celeriac *Apium graveolens* L.

Highly aromatic leaves

Used as spice

Gives good flavour

Planting material: 50-80 g of seeds per 1 ha

Direct sowing: 500 g of seeds

JEMNÝ

Veget. period: 70-80 days from planting

Harvest of fine, highly aromatic leaves

Plant forms an abundant leaf rosette

Spacing: 40 x 35 cm up to 40 x 40 cm



PIKANT

Veget. period: 70-80 days from planting
High yield, good for harvest of fresh green tops

Leaves look like leaves of curly parsley

Resistant to celeriac leaf spot disease

Frost-resistant

Spacing: 40 x 40 cm



Sweet fennel *Foeniculum vulgare* var.
dulce

Untrue “bulb / tuber”: fleshy basal leaf
petioles

Aromatic smell and flavour

Easy vegetable: no pest and diseases
(swallowtail), no need to spray: eco-
vegetable

No extra irrigation: deep pole-like root

Only disadvantage: planting material must
be pre-cultivated at 20°C, lower

temperature: bolting and no petioles, if
formed, they are woody

Ideal: warm sugar-beet growing regions



Various sowing terms were tested

Best: early June

Edible part is largest, does not become woody and does not bolt

Edible part: min. 100 g, even 400 g if sown in June

CR: optimum conditions for fennel

Nutritional value

Dry matter 14 %

Protein 2.4 %

Carbohydrates 6 %

Fibre 3.3 %

•Dietary minerals 1.7 % Ca (1,090 mg), K (5,000 mg), S (210 mg), Fe (27 mg), Zn (5 mg), Mn (3 mg)

Vitamins: C (930 mg), provitamin A (47 mg), B1, E, PP

Essential oils: 2 %, digestion, nervous system



DI FIRENZE

Very early variety, 70 days

Flat-round, shiny white "tubers", no bolting,
300-400 g

Optimum sowing time: end of June till mid-
August

Spacing: 30 x 10-15 cm

Harvest: August / October



PRECOCE DI BOLOGNA RUDY FINO F1

GOAL F1

FINO F1

GOAL F1

Few leaves are left at the top to indicate fresh state of the fennel (old = yellow, turns brown)



FINO F1

GOAL F1

Head varieties of chicory *Cichorium intybus*
var. *foliosum* forma *capitata*: Green chicory
- Zuckerhut

Conical heads: 800-1,100 g

Fresh salads

Intybin: bitter flavour

Good for metabolism, liver detox,
digestion, nervous system

Tolerates -7°C

In contrast to Radiccio chicory, green
chicory in Czech climate must be sown at
the end of June, early July



PAN DI ZUCCHERO

Yellow-green heads

Elongated, barrel-shaped Pan di zucchero

– EARLY selection

Early variety, 60 days from planting

30-35cm high heads, columnar, bright

green, well packed head Pan di zucchero –

BRAVO selection

Medium-early variety, 80 days from
planting

35-40cm heads, columnar, stable, dark
green

Resemble heads of Beijing cabbage

May be stored in cold up to 2-3 months



BIANCA DI MILANO
Italy, best in CR JUPITER COSTA PLUTO
no Czech variety

Head varieties of chicory *Cichorium intybus*
L. var. *foliosum capitata* Red variety:
Radicchio rosso
National vegetable in Italy
Round heads (400-700 g)
Rich red colour: temperature difference
between day and night must be 8-10°C
Highest concentrations of intybin: very
bitter flavour
In contrast to green chicory (Zuckerhut),
red variety may be sown all-year round
(Feb—mid-June), gradual sowing and
harvest
Intolerant to frost, freezes at -2°C
Edible part is the lowest from all
vegetables (only 50 %), the rest is leaves



PALLA ROSSA

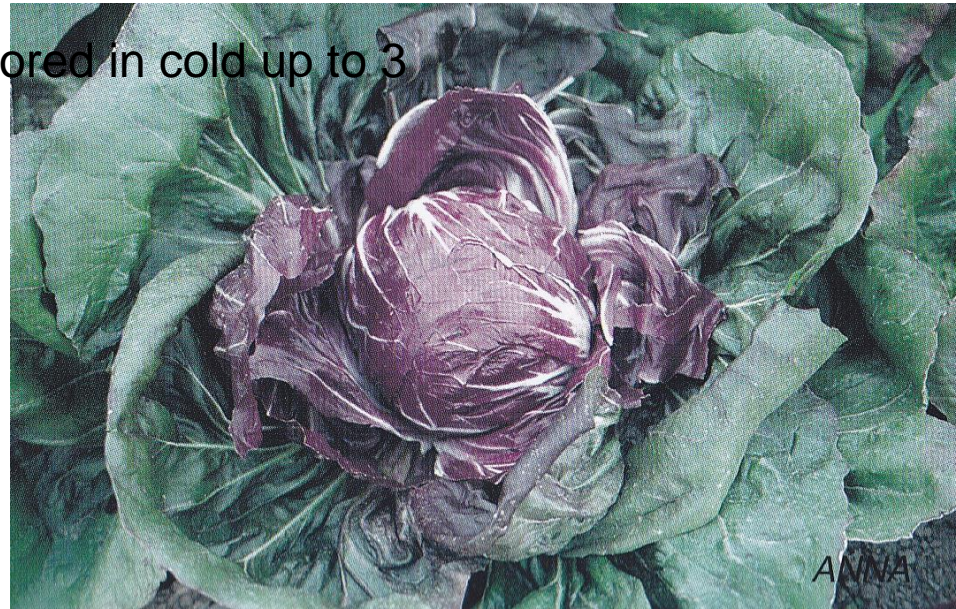
Rounds heads, bright red, red-green outer leaves Palla rossa – ANNA selection

Medium-late to late variety, 80 days from planting

Summer and autumn harvest

No cracking or bolting

Ripe heads may be stored in cold up to 3 months



INDIGO BEACON VESUVIO MELROSE

Edible part is the lowest from all vegetables (up to 50 %), the rest is wrapping leaves



Witloof chicory for forcing *Cichorium
intybus* var. *foliosum*

Chicon forcing: etiolation of growing point

Nutritional value

Rich in dietary minerals K (4,000 mg) and
Fe (20 mg)

Intybin

Inulin 1) Roots cultivation 20-25 weeks

Direct sowing: 15. 15 April-10 June

2) Forcing

8-12°C 45-60 days

12-18°C 35-40 days

18-25°C 20-35 days Boxes filled with
substrate for root crown, or hydroponics



TEREZKA

CR, high yield

Forcing of chicons in hydroponics

Short, columnar, pale-yellow, firm, and
well-packed chicons

Sowing: 2nd decade of May Spacing 45 x
10 cm

Forcing at 15-17°C: 3 weeks



FEBRA

Good variety for chicons forcing from
December till February

White, compact, tightly packed chicons

WITLOF

Foreign variety

Most grown in Europe

Diameter in crown: 3-6 cm

Wide roots: unpacked chicons, worse
quality



Spinach *Spinacia oleracea* L.

Commodity for cooling industry

Freezing, vacuum drying

Nitrates accumulation Nutritional value

Rich in dietary minerals: Ca: 860 mg K:
4,500 mg S: 200 mg Mg: 460 mg, Mn 6
mg, Fe 33 mg

Vitamins: C: 512 mg, A (beta-carotene) 28
mg, B9 (folic acid) – 1.9 mg

Nitrates 3.5 %, sugars 1.5 %

Oxalic acid: 300 mg/kg



3 terms for sowing – UNI varieties

Early in spring

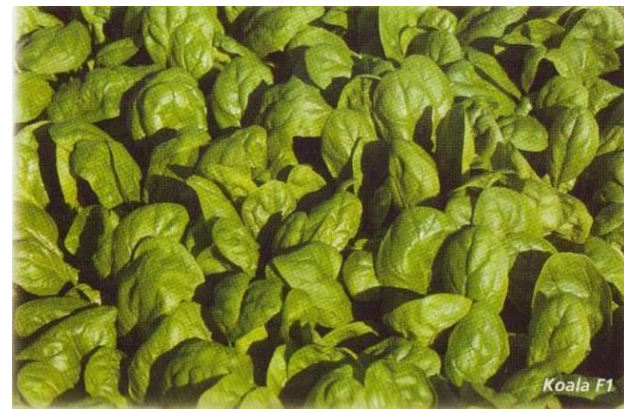
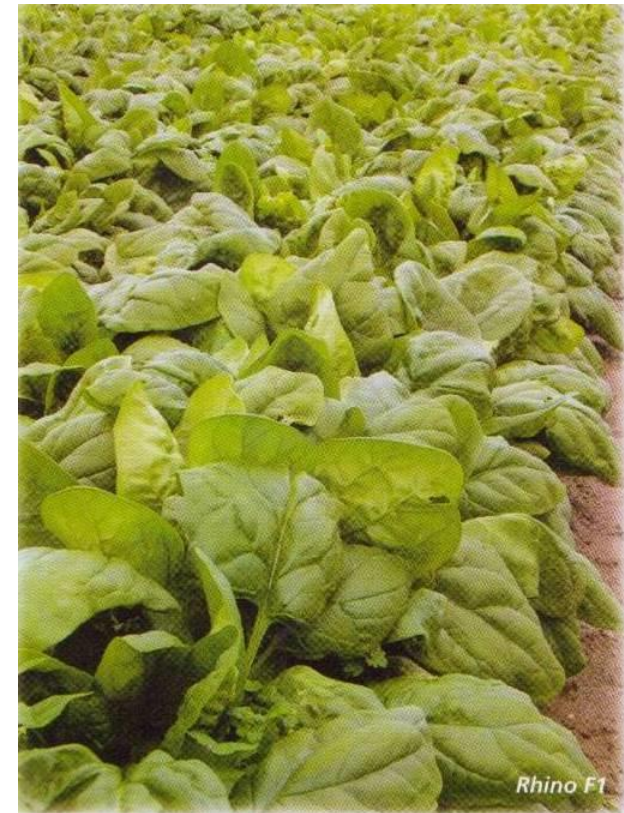
End of July, August

September for wintering Varieties:

MONORES – only CR variety, no wintering

VIKIMUN - UNI MAZURKA - UNI KOALA

F1 - UNI RHINO F1 - UNI EAGLE spring
and autumn, no wintering ability



Not recommended: HERKULES,
MATADOR

Prone to spinach downy mildew

Cannot be chemically treated

Plants turn yellow within 2-3 days

Mould coating

Sowing: 80-120 g of seeds – big losses

New Zealand spinach –*Tetragonia expanse*

Annual plant, trailing stem

Robust green (and red) leaves

Low in oxalic acid

Warm, protected locations

Poor germination, pre-cultivation of seedlings
(into pots, window sills, replant after
sprouting)

Gradual leaf harvest: July - October

New leaves grow from buds in the axils

1 plant provides a family with 2 portions of
spinach (0.75 kg of leaves) twice a month

6-7 harvests per year, plant occupies 1.5 m²

Dim, pruinose leaves are not shiny like spinach
– silver coating



Chard *Beta vulgaris* var. *cicla*
3-8cm long petioles
Good for higher altitudes
High requirements on irrigation
Sowing: April – early July
Harvest: single, or gradual (individual leaves)
Petioles for salads, coarse fibre, even with blades
Blades may be used as spinach, veget.
period: 12 weeks
Above-ground part: 15-20 leaves, 7-10 kg



1. Chard – var. vulgaris Long, narrow petioles, smooth or curly blades
2. Chard “Bright Lights” – var. flavescens: robust, wide petioles, distinct ribs in blades

Nutritional value

Dry matter 7.8 %

Protein 2.1 %

Fibre 2.0 %

Dietary minerals: Ca (1,000 mg), Fe (27 mg), Mg (810 mg)

Vitamins: C 390 mg, A (beta-carotene) 35 mg, B9 (folic acid) 1.6 mg, PP 6.5 mg

Varieties: LUCULLUS LYONSKÝ

ŠVÝCARSKÝ only for leisure gardeners,
fibred petioles, bad flavour



GATOR

For cutting

Plants keep growing, young leaves for cooking

Sown in spring, harvested throughout the year

No bolting

Spinach substitute, especially in summer

