

lettuce

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# Lettuce

## by Tom Comitta

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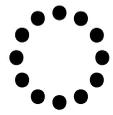
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**Lettuce**

## LETTUCE BOATS PIECE

Separate the leaves and lay out on a plate.

In a bowl, mix together the shredded chicken, mango and spring onion.

Mix together the lemon juice, honey and olive oil and toss with the chicken mixture.

Place a spoonful of the mixture into each lettuce leaf.

### LETTUCE WEDGES PIECE

1. Combine grated lemon zest, lemon juice, honey, salt and pepper in a small bowl. Add 2 Tbsp. hot water and mix well. Add mayonnaise and stir until smooth.
2. Arrange iceberg wedges on plates or a serving platter. Drizzle some dressing over each, sprinkle with pepper, if desired.

### WILTED LETTUCE PIECE

- Fry bacon and set aside and crumble when cooled.
- Drain grease from pan leaving about 2 tablespoons.
- Add sugar, vinegar, salt and pepper.
- Bring to a boil and turn off.
- Add crumbled bacon and immediately pour over a big bowl of lettuce/salad mixture of your choice.

## GRILLED ROMAINE LETTUCE PIECE

1. Prep the romaine hearts—pull off any old leaves. Chop off the top 1 or 2 inches of the lettuce head, and shave off the browned part of the root end, leaving the root end intact so that the lettuce head stays together.
2. Prepare your grill for high, direct heat. Paint the lettuce hearts all over with the vinaigrette. Prepare the vinaigrette. Put the oil, vinegar, herbs, salt and pepper in a small bowl and whisk with a fork to combine.
3. Grill the romaine hearts until lightly browned on all sides, turning every minute or two until done.

Serve immediately. You can either serve the hearts whole, or chop them and toss them for a salad.

## KEEP LETTUCE LASTING LONGER PIECE

Wash, cut, your lettuce as normal.

Pack it tightly in a glass mason jar – put the top on and put it in your fridge.

Open when you want some lettuce.

## GRILLED ROMAINE WITH POMEGRANATE GLAZE PIECE

Place the pomegranate juice in a small saucepan. Bring to a slow simmer and cook about 15 to 20 minutes until the liquid has reduced by two thirds. Set aside off the heat.

Heat a grill or grill pan over medium high heat. Coat the lettuce with a light layer of cooking spray and sprinkle with the salt. Place the lettuce on the grill and cook 4 minutes, turning occasionally until grill marks appear and the tips of the lettuce wilt. Transfer to a large platter and drizzle with the pomegranate glaze.

## HERBED FISH WRAPPED IN LETTUCE PIECE

Preheat oven to 450°F with rack in middle. Mash together butter, herbs, and shallots. Spread 1 Tbsp butter mixture on bottom of a 1 1/2-quart shallow baking dish.

Season fish with  $\frac{1}{2}$  tsp salt and  $\frac{1}{4}$  tsp pepper. Divide remaining butter mixture and spread on fillet, then roll up. Place 1 fillet on a lettuce leaf, then tuck leaf around fish to enclose fish and place in baking dish. Cover dish tightly with foil and bake until fish is cooked through, about 15 minutes.

## FORGET THE LETTUCE PIECE

Make salads this week with Florida cucumbers, Quebec endive and Mexican hydroponic tomatoes, all foods in top shape at low prices.

Lettuce, coming mostly from Arizona, is hit-and-miss as to quality.

Observant shoppers may find brown butts and ribs on iceberg. Leafy types are in better condition.

## CRISPY SHRIMP LETTUCE WRAPS PIECE

Begin by preparing the shrimp. Set up a breading station with the flour, egg wash and panko breadcrumbs, seasoned with salt and pepper. Wash the shrimp in cold water and lay them out on paper towels to ensure they are dried thoroughly. Lightly dust each in flour, followed by egg and then seasoned panko. Lay out on a tray in a single layer and put in the refrigerator to set while you prepare the other components.

Heat up some vegetable oil in a large pot or deep fryer for frying the shrimp.

Prepare the wrap components and set out on a plate in separate stacks.

Remove each leaf of Bibb lettuce and make a stack of cups. Slice the hothouse cucumber into long sticks -- take the cucumber and cut it into 3-inch lengths and then cut each of those into 6 wedges. Wash and drain the bean sprouts.

Wash and pick the mint leaves.

Make the mango relish by peeling the mango. Remove the stem of the serrano and finely dice -- seeds and all. Pick some

fresh cilantro leaves and combine all the ingredients in a bowl with lime juice, sugar and some salt. Mix until the ingredients are blended and it is the consistency of salsa.

Set aside while you fry the shrimp to allow the flavors to come together.

Deep-fry the breaded shrimp until crispy and golden then drain on paper towels. To serve, lay all components out on a large platter buffet style so each person can assemble their own wraps.

To assemble a wrap take a lettuce cup, lay a cucumber stick, some bean sprouts and stack 2 or 3 shrimp on top. Top with a spoonful of mango relish, some fresh mint leaves then fold over and eat. Repeat this step for multiple wraps.

## PINE NUT CHICKEN IN LETTUCE CUPS PIECE

Gather these tools: cutting board; chef's knife; measuring spoons; dry measuring cups; small mixing bowl; spoon; large saute pan or wok; wooden spoon.

In a small bowl, combine the soy sauce, rice wine vinegar, and cornstarch. Set aside.

In a large saute pan or wok over medium-high heat, add 1 tablespoon vegetable oil and saute diced chicken breast and saute for about 2 minutes. Remove from pan and set aside. Add the remaining tablespoon oil and saute water chestnuts, peppers, and scallions until soft.

Return the chicken to the pan and add the toasted pine nuts. Add the soy sauce mixture and stir-fry until the sauce thickens, about 1 minute.

Arrange lettuce leaves on a large platter. Top lettuce leaves with a heaping spoonfuls of the chicken mixture.

### ROQUEFORT PEAR SALAD PIECE

1. In a skillet over medium heat, stir 1/4 cup of sugar together with the pecans. Continue stirring gently until sugar has melted and caramelized the pecans. Carefully transfer nuts onto waxed paper. Allow to cool, and break into pieces.
2. For the dressing, blend oil, vinegar, 1 1/2 teaspoons sugar, mustard, chopped garlic, salt, and pepper.
3. In a large serving bowl, layer lettuce, pears, blue cheese, avocado, and green onions. Pour dressing over salad, sprinkle with pecans, and serve.

### GINGER LEMON LETTUCE JUICE PIECE

Juice all together and serve.

### STRAWBERRY, APPLE, PEAR, AND LETTUCE JUICE PIECE

Juice ingredients and serve

### TOMATO, CUCUMBER, LETTUCE AND CARROT PIECE

Juice ingredients and serve.

## VIETNAMESE TOFU-NOODLE LETTUCE WRAPS PIECE

1. Bring a large saucepan of water to a boil. Add rice noodles (or rice sticks) and cook until just tender, about 3 minutes. Drain and rinse under cold water. Gently squeeze noodles to remove most of the water.
2. Meanwhile, combine 1/4 cup water, fish sauce, lime juice, sugar and crushed red pepper to taste in a small bowl.
3. Coarsely chop the noodles and combine in a large bowl with tofu, carrot, snow peas, basil and mint. Pour the sauce over the salad and toss to combine. To serve, spoon about 1/2 cup salad onto each lettuce leaf and roll up.

## CLEANING PIECE FOR LETTUCE

Call it faith-based food safety.  
Buy it.  
Like the convenience.  
Think they do the best job of anyone of cleaning the product.  
Use chlorinated water.  
Wash it really thoroughly.

## SUN DEVIL PIECE

1. Lettuce seed having ATCC Accession Number PTA-4008.
2. A lettuce plant produced by growing the seed of claim 1.
3. A lettuce plant having all the physiological and morphological characteristics of the lettuce plant of claim 2.
4. A method of making an F1 hybrid lettuce plant consisting of crossing Sun Devil as a first lettuce parent plant with a second lettuce parent plant, wherein Sun Devil is grown from the seed of claim 1; harvesting the resultant F1 hybrid seed; and growing an F1 hybrid seed into an F1 hybrid lettuce plant.
5. Pollen of the plant of claim 2.
6. An ovule of the plant of claim 2.
7. Tissue culture of the plant of claim 2.

## BLT GRILLED PIZZA PIECE

Start charcoal fire or preheat gas grill to medium-high heat.

Combine 2 cups flour, undissolved yeast, sugar and salt in a large bowl. Add very warm water and oil; mix until well blended, about 1 minute.

Gradually add enough remaining flour to make a soft dough. Dough should form a ball and will be slightly sticky. Knead on a floured surface, adding additional flour if necessary, until smooth and elastic, about 5 minutes.

Divide dough into 8 portions. Pat or roll dough on a well-floured counter to about 8-inch circles; they do not need to be perfect.

Brush both sides of crust with additional oil. Using hands, lift each crust carefully and place on grill. Cook for 3 to 4 minutes until bottom is lightly browned and top looks set. Using long handled tongs, remove crust from grill, grilled side up, to a platter

or baking sheet.

Combine mayonnaise, mustard, garlic and black pepper. Spread lightly over crust. Crumble 2 strips of bacon and sprinkle over crust. Top with about 1/4 cup mozzarella cheese, a few tomato slices and 1 tablespoon Parmesan cheese. Repeat with remaining pizzas.

Carefully slide each pizza onto the grill. Cook an additional 3 to 4 minutes until bottom of crust is browned and cheese is melted. Remove from oven and sprinkle with lettuce.

## ANTI-AGING JUICE PIECE

Juice ingredients and serve.

## JUICE FOR SKIN CARE PIECE

Juice ingredients and serve.

## CORING POEM FOR LETTUCE

- Hold the Lettuce with both hands, core facing down
- Hit the Core firmly against the counter
- Twist and pull the core out of the lettuce

## FIVE-SPICE TURKEY & LETTUCE WRAPS PIECE

1. Bring water to a boil in a small saucepan. Add rice; reduce heat to low, cover and cook for 5 minutes. Remove from the heat.
2. Meanwhile, heat oil in a large nonstick pan over medium-high heat. Add turkey and ginger; cook, crumbling with a wooden spoon, until the turkey is cooked through, about 6 minutes. Stir in the cooked rice, bell pepper, water chestnuts, broth, hoisin sauce, five-spice powder and salt; cook until heated through, about 1 minute.
3. To serve, spoon portions of the turkey mixture into lettuce leaves, top with herbs and carrot and roll into wraps.

## HOISIN LETTUCE WRAPS PIECE

Wash and thoroughly dry butter lettuce and set aside.

In a small bowl, make the sauce: combine next six ingredients (through garlic chili sauce) in a small bowl.

Heat vegetable oil in a large frying pan or wok over medium heat. Add shallot, carrot, and celery and cook for a few minutes until softened. Then add mushrooms, ginger, and garlic, and cook until the mushrooms are lightly browned. Add the faux ground meat and the sauce and cook just until warmed through, stirring frequently.  
Revel in your delicious feast a little.

## LETTUCE PIECE FOR BUGS

Lettuce and all greens need to be checked for bugs, period; it is a time consuming inspection which require a high level of fear of G-D to do properly, and no single restaurant owner can be expected to spend 2/4 hours daily doing it when there are so many other aspects of the business to be looked after.

LETTUCE VARIETIES PSR 4569 AND PSR 4570 HAVING BOTH ICEBERG AND ROMAINE LETTUCE CHARACTERISTICS AND METHODS OF MAKING AND USING PIECE

PREFERENCE PIECE

Not bagged.

1. Seed of a lettuce variety designated PSR4569, representative seed having been deposited under ATCC Accession No. PTA-3249.
2. A lettuce plant, or parts thereof, produced by growing the seed of claim 1.
3. Pollen of the plant of claim 2.
4. An ovule of the plant of claim 2.
5. A tissue culture of regenerable cells from the plant of claim 2.
6. A tissue culture according to claim 5, wherein said cell or a protoplast of the tissue culture is produced from a tissue selected from the group consisting of: leaves, pollen, embryos, cotyledon, hypocotyl, meristematic cells, roots, root tips, anthers, flowers, seeds and stems.
7. A lettuce plant regenerated from the tissue culture of claim 5, wherein the regenerated plant has all of the

morphological and physiological characteristics of lettuce cultivar PSR4569, representative seed of said lettuce cultivar PSR4569 having been deposited under ATCC Accession No. PTA-3249.

8. A method for producing a hybrid lettuce seed comprising crossing a first parent lettuce plant with a second parent lettuce plant and harvesting the resultant hybrid lettuce seed, wherein said first parent lettuce plant or said second parent lettuce plant is the lettuce plant of claim 2.

9. A method of producing an iceberg lettuce having a first outer leaf with a length to width ratio greater than 1.0 comprising:

- a) crossing Salinas 88 with PI206964 to produce hybrid seed;
- b) growing said hybrid seed to produce a hybrid plant;
- c) selfing said hybrid seed to produce F2 progeny seed;
- d) growing said F2 progeny seed to produce F2 plants; and
- e) selecting said F2 plants for expression of a first outer leaf with a length to width ratio of greater than 1.0 and having one or more

characteristics selected from the group consisting of: spatulate leaf shape, semi-open head, elliptical stature, resistance to corky root rot and resistance to lettuce mosaic virus.

10. The method of claim 9, further comprising:

- f) selfing said selected plant to yield iceberg lettuce progeny seed;
- g) growing said progeny seed of step (f) under plant growth conditions to yield progeny plants; and
- h) repeating the selfing and growing steps of (f) and (g) from 0 to 7 times to generate further iceberg lettuce plants which express one or more of the following characteristics selected from the group consisting of: length to width ratio greater than 1.0, spatulate leaf shape, elliptical stature, semi-open head, resistance to corky root rot, and resistance to lettuce mosaic virus.

11. A lettuce plant produced by the method of claim 10, wherein said plant has all the morphological and physiological characteristics of lettuce cultivar PSR4569, representative seed of said lettuce cultivar

PSR4569 having been deposited under ATCC Accession No. PTA-3249.

12. A lettuce plant produced by the method of claim 10, wherein said plant has all the morphological and physiological characteristics of lettuce cultivar PSR4570, representative seed of said lettuce cultivar PSR4570 having been deposited under ATCC Accession No. PTA-3247.

13. Seed of a lettuce variety designated PSR4570, representative seed having been deposited under ATCC Accession No. PTA-3247.

14. A lettuce plant, or parts thereof, produced by growing the seed of claim 13.

15. Pollen of the plant of claim 14.

16. An ovule of the plant of claim 14.

17. A tissue culture of regenerable cells from the plant of claim 14.

18. A tissue culture according to claim 17, wherein said cell or a protoplast of the tissue culture is produced from a tissue selected from the group consisting of: leaves, pollen, embryos, cotyledon, hypocotyl, meristematic cells, roots, root tips, anthers, flowers, seeds and stems.

19. A lettuce plant regenerated from the tissue culture of claim 17, wherein the regenerated plant has all of the morphological and physiological characteristics of lettuce cultivar PSR4570, representative seed of said lettuce cultivar PSR4570 having been deposited under ATCC Accession No. PTA-3247.

20. A method for producing a hybrid lettuce seed comprising crossing a first parent lettuce plant with a second parent lettuce plant and harvesting the resultant hybrid lettuce seed, wherein said first parent lettuce plant or said second parent lettuce plant is the lettuce plant of claim 14.

## GRILLED BEEF LETTUCE CUPS WITH CARROT, RADISH & CILANTRO PIECE

Combine soy sauce, lime juice, peanut oil, brown sugar, garlic, ginger and red pepper flakes in a mixing bowl and whisk to combine. Pour into a large ziplock bag, add flank steak and let marinate at room temperature for 30 minutes.

Heat a cast iron grill pan over high heat and drizzle with a little canola oil. Remove flank steak from marinade and remove any excess marinade with paper towel. Cook steak for 5-7 minutes on each side for medium rare. Transfer the steak to a cutting board and let rest for 10 minutes. Slice thinly against the grain.

Compose a platter with a stack of lettuce leaves; a pile of julienned carrot and julienned radish; cilantro leaves and scallions.

## LETTUCE POEM FOR THE BASEMENT

Lettuce put our heads together  
and search for bugs.

## HEDDA LETTUCE BACKSTAGE AT THE GLAMMY AWARDS PIECE

Wake up lying naked on a bearskin rug, in front of a roaring fire, with a copy of the latest people magazine (with Channing Tatum on the cover), and an open container of Boy Butter Lube.

Whose apartment it is, your guess is as good as mine.

No one is around when you woke up.

But there is an extremely retouched photo of Sherry Vine over the fireplace.

## PLANT TO EXIST AS INSECT-RESISTANT LETTUCE

1. A plant of the genus *Lactuca* which has been regenerated from a plant cell transformed to comprise a full length *Bacillus thuringiensis* crystal protein gene capable of encoding a *Bacillus thuringiensis* crystal protein of approximately 130-135 kD under control of a promoter such that said gene is expressible in said plant in amounts insecticidal to Lepidopteran insects.

2. A plant cell of genus *Lactuca* transformed to comprise a full length *Bacillus thuringiensis* crystal protein gene capable of encoding a *Bacillus thuringiensis* crystal protein of approximately 130-135 kD under control of a promoter such that said gene is expressible in said plant cell in amounts insecticidal to Lepidopteran insects.

3. The plant of 1 in which the plant is *Lactuca sativa*.

4. The plant of 1 in which the coding sequence encodes the protein encoded by

the DNA sequence 1-3471.

5. The plant of 1 which exhibits toxicity toward *Heliothis virescens*.

6. The plant of 4 which exhibits toxicity toward *Heliothis virescens*.

7. The cell of 2 in which the plant cell is *Lactuca sativa*.

8. The cell of 2 in which the coding sequence encodes the protein encoded by the DNA sequence 1-3471.

9. The cell of 2 which exhibits toxicity toward *Heliothis virescens*.

10. The cell of 8 which exhibits toxicity toward Lepidopteran of the genus *Heliothis virescens*.

## HARVESTING LETTUCE PIECE

An improved method of harvesting lettuce provide a frame having ground engaging members (eg. wheels, skids, tracks) that enable the frame to move along the rows of lettuce to be harvested. Powered paddles separate each head of lettuce from its stem and root system, thrusting it through the air to a conveyor. A timing arrangement coordinates the paddle actuation with the speed at which each head of lettuce is encountered. As the head is thrust upward, a spray mist emerges from the tip of one paddle and engulfs the cavity that remains after separation from the stem and root. The spray mist can be a liquid and air mixture that contains a desired chemical to prevent discoloration in the area of the "wound" resulting from being torn from the stem and root system.

## THE CHEESECAKE FACTORY LETTUCE WRAPS PIECE

Remove the hard stems from the bottom of each leaf of lettuce.

Wash and dry the leaves and arrange in a group on a larger platter.

Remove 2 red cabbage leaves, wash and dry and slice in half vertically.

Arrange on the serving platter and fill with each one of the fillings (chicken, bean sprouts, thai coconut curry noodles and marinated cucumbers).

Let your friends or family create their own lettuce wraps by choosing a filling or fillings and placing it on a leaf along with a choice of sauce.

Fold the leaf in half and enjoy!

## LETTUCE PICTURE

Use a camera to image the plants beneath. Identify which ones are desirable and which are weeds.

This can work with iceberg and romaine lettuces.

## WASHING LETTUCE PIECE

First, cut the head of lettuce away from its root with a knife. Then, separate the leaves.

To wash iceberg lettuce first remove the core with a paring knife.

Then break it apart with your hands.

Fill a large bowl with cool water and gently place the lettuce leaves in the bowl giving them a gentle swish as you drop them in the bowl.

After about 30 seconds of floating in the water the sand or dirt will sink to the bottom. Gently shake the water off each leaf and place them one at a time on paper towels or a clean dish towel. Blot the lettuce dry with some more paper towels.

OK, that's the manual way. Now let's use the salad spinner.

A salad spinner is a great little tool for both washing the lettuce and getting the excess water off. It comes in three parts – the bowl, the colander (the bowl with the holes in it) and the lid.

You begin the same way by cutting off the root and separating the leaves. But now,

you place the leaves inside the colander, which is sitting inside the bowl.

Fill the spinner with water. All the sand on the lettuce leaves should sink to the bottom.

Lift the colander (with the lettuce in it) out of the bowl, pour away the water, and then replace the colander in the bowl. Finally, put the lid on.

Now you can spin the lettuce by turning the handle. The spinning action will force the water off the lettuce, and help it to dry.

## GREEN LETTUCE PIECE

in salads  
as a garnish  
as an accompaniment.

## RED LETTUCE PIECE

The present invention relates to a red lettuce plant, to the head of lettuce that can be obtained therefrom and to the gene complex that is responsible for the red colour of the lettuce.

Lifestyles change and the demand from restaurants and catering firms for colourful and interesting garnish and even from the housewife for ready-to-use processed salads continue to rise. As a result, the breeding companies are looking for varieties with prominent colour, better taste and a wide variety of texture. The lettuce market can be divided into three groups, namely entire whole heads, pre-cut whole heads and baby leaves. At present the attractive red colour in pre-cut lettuce mixtures is often provided by the presently available "red" lettuce (*Lactuca sativa*), or by radicchio rosso (*Cichorium*

intybus) , red cabbage or red chard. The "red" lettuce that has been known so far is not really red throughout the leaves. In particular the head forming types are either only red along the leaf edges or speckled with red. They are never completely red in the heart. This is caused by the fact that the red colour is only expressed in those parts of the head that are exposed to daylight, more specifically to UV-radiation. Leaves of the so-called "red" lettuces are therefore for the main part green and their red does hardly contribute to the red colour impression of a pre-cut lettuce mixture.

Often the transitional stage between the red part and the green part of the leaf is brown-coloured. This brown colour is considered as visually unattractive. Red speckled lettuces are associated with plant diseases or bloodstains. At present plant breeders select against the brown colour

as well as against the speckled red colouring. In addition, it is even found that speckled or brown coloured lettuce leaves are often discarded, both in the lettuce packaging industry and by the consumer. The disadvantage of using leaves from other vegetables than lettuce is that the different taste of these other vegetables is often experienced as undesirable. Radicchio rosso is for example a *Cichorium intybus* that has a bitter taste. The texture of red cabbage is entirely different from the much softer texture of lettuce. Anthocyanin synthesis in lettuce is induced by UV-radiation (see for example Voipio & Autio, 1995, Responses of red-leaved lettuce to light intensity, UV-A radiation and root zone temperature. In: *Acta Horticulturae* 399. Greenhouse environmental control and automation. Eds. BJ Bailey, T Takakura. Kyoto, Japan, p 183-187; Benoit, et al . , 1998, Effect of a

photoselective greenhouse film on a few vegetable crops in the Belgian North Sea climate. In: 14th International congress on plastics in agriculture, Tel Aviv, Israel, March 1997. Laser Pages Publishing, Jerusalem, Israel, p 81-92; Krizek et al . , 1998, Inhibitory effects of ambient levels of solar UV-A and UV-B radiation on growth of cv. New Red Fire lettuce. *Physiologia Plantarum* 103(1), p 1-7; Kleinhenz et al . , 2003, Variety, shading, and growth stage effects on pigment concentrations in lettuce grown under contrasting temperature regimens. *Horttechnology* 13(4), p 677-683.) . The development of a red colour in many plant species is dependent on the production of anthocyanin.

The many different varieties of lettuce are often grouped into three types. The most common is head lettuce of which there are

the crisp head (or iceberg) and butter head. Romaine lettuce (or cos lettuce) forms a loose upright head. The "leaf" lettuce types are non-heading and loose leafed. In head-forming lettuce types the heart of the head is to a more or lesser extent closed and cannot be reached by light. It is thus not possible to have anthocyanin production in closed heads such as iceberg lettuce and butter lettuce or in romaine lettuce, which has a loosely closed head.

A related problem is the lack of red colouration of red lettuce grown in glasshouses, plastic tunnels, or in closed containers. Due to the lack of UV-radiation, which is reflected by the glass or plastic covering or which is lacking in the artificial assimilation light spectrum, the expression of anthocyanin is much less than in outdoor conditions. This reduces the possibilities to produce red lettuce under indoor

conditions, and therefore the possibility to produce red lettuce protected from adverse weather conditions, like cold, heat, and all sorts of precipitation.

The present invention now provides a red lettuce, having red leaves throughout the head, including the heart. The heart leaves of red lettuce of the invention are in essence completely red, which means that they contain a uniquely high anthocyanin/chlorophyll-ratio . This is very- surprising because light, more specifically UV-light, which is deemed necessary for the synthesis of anthocyanin is not able to penetrate into the heart of the head. This demonstrates that in the lettuce of the invention a light-independent mechanism is responsible for the production of anthocyanin.

This light-independency also allows for the cultivation of red lettuce, headed or non-headed, under glass or plastic or in closed

containers. The latter uses artificial assimilation lighting which usually gives problems with the development of red colour. This is due to the fact that the UV-wavelengths (280-400 nm) which are normally essential for induction of anthocyanin synthesis, are more or less lacking in the light spectrum.

Under glass or plastic a similar lack of UV-radiation is commonly caused by strong UV-interception of the covering. However, due to its UV-independent anthocyanin expression the red lettuce of the invention is suitable for glasshouse, plastic house, and closed container cultivation. This is due to the light-independent mechanism of the present invention, which will also be indicated as "UV-independent anthocyanin expression", or "UV-independent red colouration".

In a particular embodiment of the invention, the absorbance ratio  $A_{523}/A_{665}$

between anthocyanin and chlorophyll lies between 4 and 50, preferably between 9 and 27. Whether the expression of anthocyanin in the present invention is completely independent of UV-radiation, or that it is triggered by much lower levels of UV-radiation than normally required for anthocyanin expression in regular red lettuce plants, is not completely known yet. However, for practical usefulness of the invention this difference does not matter.

Although the invention is particularly useful in head-forming lettuce types, the light-independent red colouring of the invention can also be used in other lettuce types such as leaf lettuce and in baby-leaf production, which is the production of young lettuce plants for harvesting small, immature leaves.

The pedigree of a red lettuce of the invention is given in Example 1. The invention relates to all progeny of the

original parents that have red leaves in the heart of the head and that meet one or more of the other requirements of the invention, such as the ratio between chlorophyll and anthocyanin of the heart leaves.

In addition, non-heading, loose leaf or baby lettuce plants that have the UV independent red colouration of the invention are also considered progeny of the completely red head-forming lettuce plants and thus part of this invention. The selection of lettuce plants that already are or can lead to the lettuce plants of the invention can be based on visual selection of red-coloured young plants (step 1). Growing them under glass or plastic can subsequently distinguish between UV-dependent anthocyanin expression, i.e. poor red colouration, and UV-independent anthocyanin expression, i.e. a relatively strong red colouration. These latter plants

are planted and grown until they are headed. Then visual selection of plants with red heart leaves is performed by cutting the top off each plant. The red-hearted plants are then selected to produce offspring seed.

Crosses are chosen to increase the level of red colouration, and/or to obtain the required level of heading of the mature plant.

As used herein, a lettuce plant is defined as headed, when it has got an 'open head' or a 'closed head', according to the guidelines of UPOV for the characteristic 'head formation' ("TG/13/9. Lettuce {*Lactuca sativa* L.) Guidelines for the conduct of tests for distinctness, uniformity and stability. ' International Union for the Protection of New Varieties of Plants. Geneva. 2004) .

The lettuce hearts of the present invention have an absorbance ratio A523/A665

between chlorophyll and anthocyanin which is preferably higher than 9, more preferably 13 or higher. In normal red lettuce this ratio was never found to be higher than 3. The chlorophyll and anthocyanin concentrations used in determining the ratio of the invention are determined by means of spectrophotometry. Sample preparation and analysis is presented in Example 2.

It is to be noted that anthocyanin levels as high as in the heart leaves of the present invention can possibly be found in other lettuce varieties, which are non-heading. Some examples of such non-heading varieties are 40-0203103-B (Knerr LD, 2005. Lettuce cultivar 40-0203103-B. US Patent application US 2005/0144672 A1), Galactic, New Red Fire, Rolina (Kleinhenz et al, 2003. Variety, shading and growth stage effects on pigment concentrations in lettuce grown under contrasting temperature regimens.

Horttechnology 13(4) p.677-683), Red Salad Bowl, and Sesam (Voipio I. and Autio J., 1995. Responses of red-leaved lettuce to light intensity, UV-A radiation and root zone temperature. Acta horticulturae 399. p.183-187).

However, these varieties have heart leaves with very high chlorophyll levels, in comparison with the heart leaves of the present invention, as a result of high light exposure due to the non-heading characteristic. On the other hand, heading varieties can possibly be found with similarly low chlorophyll levels in the heart leaves as in the heart leaves of the present invention. However, the heart leaves of these heading varieties do not show the high anthocyanin levels in comparison with the heart leaves of the present invention. Due to the low light exposure of the heart leaves anthocyanin synthesis is normally poorly induced. In the present invention,

the anthocyanin production is UV-independent. This explains why the anthocyanin/chlorophyll-ratio of the present invention is on an unprecedentedly high level. This new form of red colouration that is UV-independent is found and developed in headed lettuce plants and differs from the red colouration as presented in the prior art. However, the invention also relates to non-headed lettuce plants, such as loose leaf or baby leaf lettuce plants or lettuce plants that are grown in glass houses or under plastic where the amount of UV is lower than have the feature "UV-independent red colouration" of the invention. Red colouration of the heart leaves was also scored on the RHS colour chart (The Royal Horticultural Society, London, UK). Heart leaf lamina colour, especially on the top of leaf, of the present invention was scored as 183A, 184A, or 187B, all in the greyed-

purple group. The colour of the rest of the leaf lamina was scored as 180B, 180C, 180D, or 181C, all in the greyed-red group.

It is also possible to score the red colouration and anthocyanin expression on plants grown under glass or plastic, i.e. conditions with reduced levels of UV-radiation, when compared to the light in outdoor conditions. Also here the plants of the present invention can show higher levels of anthocyanin and a darker red colour than regular red lettuce. Especially newly appearing leaves of the plants of the present invention are much more red than the newly appearing leaves of common red lettuce plants.

A genetic analysis of the red lettuce of the invention was performed as described in Example 2. It was found therein that at least three genes are involved in the red colouring of the heart of the head. The present invention thus relates to lettuce

plants that are capable of expressing anthocyanin and have in addition at least the three genes that are involved in the red colouring of the heart of the head. Preferably, a plant of the invention comprises the complete gene complex described in Example 2.

It is possible to assess the presence of the loci involved in red coloration of the present invention by closely linked DNA-markers, like AFLP, RFLP, RAPD, SCAR, CAPS, SSR, or SNP. For instance, a marker-trait linkage analysis in the population mentioned above, and its offspring can provide such closely linked DNA-markers. The presence in a lettuce plant of a similar genetic constitution of red colouration of the inner leaves as in the present invention, i.e. assessing whether a lettuce plant is a plant according to the invention can easily be assessed by comparison of the phenotype of such potential plant of the

invention with the phenotype of a known plant of the present invention. The phenotype can be assessed by, for example, the red colouration of the inner leaves, the anthocyanin/chlorophyll-ratio of the heart leaves, and/or the red colouration of plants grown under glass or plastic. Another way of assessing the similarity of the genetic constitution between a potential plant of the invention and a known plant of the invention is by comparison of the marker genotype of the potential plant with the marker genotype of a known plant of the present invention. The marker genotype is defined by a set of DNA-based markers, like AFLP, RFLP, RAPD, SCAR, CAPS, SSR, or SNP, which are closely linked to the loci which involved in the red expression of the present invention.

Another way of assessing the similarity of the genetic constitution, is the comparison

of the genotype of a potential plant of the invention with the genotype of a known plant of the present invention. This genotype comparison is done on an F<sub>2</sub>-population, derived by self-fertilising an F<sub>1</sub>-plant from a cross between the potential plant and a known plant of the present invention. The F<sub>2</sub>-population can be investigated for absence of segregation for the phenotype, i.e. the red colouration of the inner leaves. In all comparisons phenotypes can also be assessed by, for example, the anthocyanin/chlorophyll-ratio of the heart leaves, or the red colouration in plants grown under glass or plastic.

Seed of red lettuce plants according to the invention was deposited with the NCIMB on 18 July 2005 under accession numbers NCIMB 41337, NCIMB 41338 and NCIMB 41339.

The invention also relates to progeny of

these seeds, as well as to plants that have obtained the genetic constitution or gene complex of plants of the invention that leads to the red colouring according to the invention, either by crossing or by means of molecular biological techniques. The invention also relates to the progeny of these plants that have maintained or acquired the trait of red colouring of the invention.

To transfer the genes that are responsible for the red colour to another plant backcross breeding can be used. For this a desirable homozygous cultivar or inbred is the recurrent parent. The source of the trait to be transferred is called the donor parent. The resulting plant is expected to have the attributes of the recurrent parent (e.g., cultivar) and the desirable trait transferred from the donor parent. After the initial cross, individuals possessing the phenotype of the donor parent (red

colouring of the leaves in the heart) are selected and repeatedly crossed (backcrossed) to the recurrent parent. The resulting plant is expected to have the attributes of the recurrent parent (e.g., cultivar) and the desirable trait transferred from the donor parent. In case the inheritance of the red colouration is more complex than the inheritance of the other desired trait, or combination of traits, the parent with red-coloured heart leaves can be used as recurrent parent, and the parent with the other desired trait, or combination of traits, can be used as donor parent. Descriptions of other breeding methods that are commonly used for different traits and crops can be found in one of several reference books (e.g., "Principles of Plant Breeding" John Wiley and Son, pp.115-161, 1960; Allard, 1960; Simmonds, 1979; Sneep et al . , 1979; Fehr, 1987).

The present invention is further illustrated in the examples that follow and that are given for illustration purposes only and are not intended to limit the invention in any way.

Figure 1 shows distribution of within-line segregation of red colouration of outer and inner leaves for population of 212 F3-lines obtained from cross '99P.30637' x cv. 'Sharp Shooter'. Three classifications of red colouration were applied on the population: 'red outside', i.e. within-line frequency of plants with red outer leaves, irrespective of inner leaf colour; 'red outs&red ins', i.e. within-line frequency of plants with red outer and red inner leaves, 'red ins/red outs', i.e. frequency of plants with red inner leaves within the line-total of plants with red outer leaves. O=observed; E=expected, according to genetic model

Figure 2 shows the genetic model for anthocyanin expression based on

segregation in cross '99P.30637' x cv. 'Sharp Shooter' .

Figure 3a shows a plant of the invention. This young plant is a plant from a seed from the line 03P82421, which was obtained after three generations of self fertilisation 25 of plant 99P38154. Figure 3b, 3c, and 3d show young plants of parents Pierrot, Pippo, and Gringo, respectively. Figure 3e and 3f show young plants of comparison varieties Apache and Bijou, respectively. All these young plants were grown on peat blocks in a growth chamber with 14h light at 16<sup>0</sup>C and 10h dark at 12<sup>0</sup>C. Light was produced by Philips TLD 36 W 840 REFLEX tubes, with 1 tube per 0.24 square m, at 0.6 m distance above the plants. Figure 4 shows a young leaf of a plant of the invention, indicated by 'NEW', in comparison to young leaves from the commercial varieties Pippo, Pierrot and Gringo. These young plants were grown on

peat blocks in a growth chamber with 14h light at 16°C and 10h dark at 12°C. Light was produced by Philips TLD 36 W 840 REFLEX tubes, with 1 tube per 0.24 square m, at 0.6 m distance above the plants. Figures 5-8 show comparisons between a plant of the invention (01P80146) and the commercial varieties Darkland (indicated by '99R10044'; figures 5a-5d) , Pierrot (indicated by '95G2237'; figures 6a-6d) , Roxy (indicated by '99R10283'; figures 7a-7d) and Sierra (indicated by '95G1986'; figures 8a-8d) , respectively. The a-figures (5a, 6a, 7a, 8a) are showing the full harvested heads, The b-figures (5b, 6b, 7b, 8b) are showing the heart without outer leaves, The c-figures (5c, 6c, 7c, 8c) are showing a longitudinal section of the heart. The d-figures (5d, 6d, 7d, 8d) are showing cut heart leaves. The lettuce plants of the invention are completely red in the heart of the head whereas the other lettuce plants

are not. All plants are grown in Aramon, France in 2002: sown on 10 January 2002, transplanted into a confidential open field on 15 February 2002, harvested on 25 April 2002.

#### EXAMPLES EXAMPLE 1

Pedigree of a red lettuce of the invention  
The lettuce of the invention was obtained according to the following pedigree: in 1986 a cross was made between a plant of cv. Pippo (Rijk Zwaan; red-coloured) and a plant of cv. Blonde Maraichere (Caillard; green-coloured) .

In 1988 a red offspring plant from this cross was used as a father in a cross with a plant of cv. Gringo (Rijk Zwaan; red-coloured) . In the same year a cross was made between a plant of cv. Pierrot (Rijk Zwaan; red-coloured) and a plant of cv. Roxette (Rijk Zwaan; green-coloured).

In 1989 a red offspring plant from this cross was used as a father in a cross with a plant

of cv. Krizet (Rijk Zwaan; green-coloured).

In 1992 a red F3-offspring plant was selected from the Krizet x (Pierrot x Roxette) -cross mentioned above and it was used as a mother in a cross with a father plant, which was a selected red offspring plant from the Gringo x (Pippo x Blonde Maraichere) -cross mentioned above. A red F4-plant from this newly obtained 1992-cross was selected in 1995 and used as a mother in a cross with a plant of cv. Roxette (Rijk Zwaan; green-coloured). Selection on type, heading, and colour, which was performed in the F2-, F3-, and F4-generation from this cross, resulted in a red F4-plant (98P.31582) in 1998. The F5-line appeared to be segregating for colour (red vs. green), but selection in the next generation resulted in three headed F5-plants with completely red heart leaves (99P.38152; 99P.38154; 99P.30637), which were multiplied in the years afterwards .

The offspring showed no segregating green plants, and seeds were deposited under nrs . 02R.2413, 01R.1439, 02R.2418. These F5-plants and their offspring have served as a parent source for further breeding of lettuce with light-independent red colouration.

In conclusion, it can be said that none of the used parent varieties, i.e. Pippo, Blonde Maraichere, Gringo, Pierrot, Roxette, and Krizet, have the characteristic red leaves in the heart of the head. The invention comprises the unique and new combination of genes from these red and green parent varieties, which is providing the completely red leaves in the heart of the head. EXAMPLE 2

Genetic analysis of the red lettuce of the invention

As used herein, a locus (plural: loci) is defined as the specific place on a chromosome where a gene is located. (Griffiths AJF, Miller JH, Suzuki, DT, Lewontin RC, Gelbart, WM. 'An

introduction to genetic analysis.'

6<sup>th</sup> edition. 1996. WH Freeman and Company, New York.) The number of loci responsible for red colouration in a given plant can be established by a genetic analysis of the offspring of a cross of this plant with the green-coloured cv 'Sharp Shooter'.

A genetic analysis of the red lettuce of the invention was performed as follows: a cross was made between an offspring plant from F5-plant nr . 99P.30637, i.e. a plant of the present invention, and a non-brilliant green-coloured iceberg lettuce plant of cv. Sharp Shooter (SVS, Waycott et. al., 1999: US-patent nr 5,973,232). From the offspring of this cross 212 random F2-plants were multiplied into F3-lines.

These 212 F3-lines were evaluated in a confidential outdoor trial in Fijnaart, the Netherlands. Seeds were sown on peat blocks on June 17, 2002, young plants were raised in a glasshouse, and transplanted in the field on July 5, 2002. The harvest date

(time of observation) was on August 19 until August 23, 2002. The plot size was 24 plants per F3-line, i.e. 4 rows of 6 plants. Lines were not replicated, because expression of colour traits is very stable within one trial. Observations were done per F3-plant.

Observed traits were: a) colour, and, if red, its intensity and expression pattern on the outer leaves, b) colour, and, if red, its intensity and expression pattern on the inner leaves, c) degree of heading, d) in case of green outer leaves: scoring in 2 classes: brilliant or non-brilliant . The intensity and expression pattern of the red colouration was scored, in increasing order, as: 1) tinged or blushed, i.e. light red colouration on the outer and inner leaf edges, or on the inner leaf base, 2) red spotted, 3) green spotted, i.e. green spots on red leaf surface, 4) fully red, i.e. intensely red coloured without spots, on the light-exposed part of the outer leaf

parts, and, in case of inner leaves, throughout the inner leaf.

Heading was scored between 1) slightly open heading, like Romaine or cos lettuce, and 2) strong heading with clearly overlapping leaves, like iceberg lettuce.

Some plants in the trial died before harvest. Of the intended 5088 plants, i.e. 212 x 24, in total 5007 F3-plants reached harvestable stage and were scored (see Table 1) . All plants showed heading levels, which were at least comparable to Romaine or cos lettuce. Data showed a segregation of 55 fully green lines out of the total of 212. Out of the 157 lines that were having at least one plant with red colouration, 28 lines comprised of plants which were all showing anthocyanin expression on the outer leaves. Out of these 28 lines, 8 lines comprised of plants which were all showing anthocyanin expression on the heart leaves. The red-coloured plants out of 33 of the 157 lines

with at least one red-coloured plant, were showing anthocyanin expression only in the outer leaves and not in the heart leaves. The red-coloured plants out of another 33 of the 157 lines were always showing anthocyanin expression on both the outer leaves as well as the heart leaves. The red-coloured plants out of the remaining 91 lines all showed anthocyanin expression in the outer leaves. However, these plants showed a within-line segregation of anthocyanin expression in the heart leaves. Not a single plant out of the 5007 plants showed anthocyanin expression in the heart leaves in combination with green-coloured outer leaves, which had no anthocyanin expression.

It is therefore concluded that one or more genes that result in anthocyanin expression in the outer leaves, are required for anthocyanin expression in the heart leaves. In the case of segregation between red and green, segregation ratios between red and

green ranged from 23:1 to 1:22 for colouration of outer leaves. For inner leaves the segregation ratios between red and green colouration ranged from 18:1 to 1:23, excluding all plants with green outer leaves. Table 1 shows the within-line distribution of plants with red and green colouration of outside and inside leaves for a population of 212 randomly derived F3-lines from cross '99P.30637' x cv. 'Sharp Shooter'<sup>1</sup>.

Table 1

	all plants with green outer leaves	part of plants with red outer leaves	all plants with red outer leaves
all plants with green inner leaves	55	29	4
part of plants with red outer leaves have red inner leaves	0	75	16
all plants with red outer leaves have red inner leaves	0	25	8

These segregation data were used to construct a genetic model, under the assumption of independent Mendelian segregation ratios. It was found that at least three loci are involved in obtaining UV-independent anthocyanin expression in the inner leaves. The first locus, further indicated as A-a, is also found in known red lettuce and the dominant allele A is required in all cases to obtain expression of anthocyanin. Probably this locus is the C or G-locus (Robinson et al . , 1983, The genes of lettuce and closely related species. In: Plant Breeding Reviews 1. Ed. J Janick. p 267-293) .

A second locus is found by fitting the model, further indicated as B-b, where the homozygous presence of recessive allele b results in anthocyanin expression of outer leaves in combination with A. Two more loci, further indicated as C-c and D-d, were found to be also involved in anthocyanin

expression in the outer leaves. Either presence of at least one copy of the dominant allele C, or homozygous presence of the recessive allele d results in anthocyanin expression in the outer leaves, but only in the case that also at least one copy of allele A is present.

Three more loci, further indicated as E-e, F-f, and G-g, were found. To obtain UV-independent anthocyanin expression in the inner leaves the presence of at least one A-allele, and two b-alleles is required, in combination with either the presence of one copy of the dominant E-allele, or the homozygous presence of the f-allele, or the homozygous presence of the g-allele. So the presence of alleles for red colouration on at least three loci, namely A-a, B-b, and either E-e, F-f, or G-g, is required for UV-independent anthocyanin expression in the inner leaves. Furthermore, it is assumed that at least three, but probably all seven

loci mentioned above are involved in the intensity of red colouring of the present invention. EXAMPLE 3

Determination of colour, anthocyanins and chlorophylls in lettuce

1. Sample preparation and analyses A spectrophotometer UltrospecIII (Pharmacia) , with the following specifications was used:

Monochromator : Czerny Turner with holographic diffraction grating (1200 lines/mm)

Wavelength accuracy:  $\pm 1$  nm -

Wavelength reproducibility:  $\pm 0.5$  nm

Detector type: single solid state silicon photodiode

Bandwidth: 5 nm

2. Principle

The red colour (anthocyanins) and green colour (chlorophylls) are determined with an biochemical method. Two extracts are

made, one for measuring the absorbance at 523 nm which is a measure for total anthocyanins and one for measuring the absorbance at 665 nm which is a measure for total chlorophylls (chlorophyll a and b).

### 3. Sample preparation

The headed and mature lettuce plant is harvested and outer leaves are taken off, until the heart is left over. The heart of the lettuce is used for the analysis. The heart leaves should not have been exposed to direct sunlight before harvest, except for a small tip of the leaf (maximum 10%) on the top of the plant. A heart contains at least 10 leaves with a length of 1 cm or longer. The oldest leaves of the heart should be concave .

The hearts are put in plastic bags and frozen at 0C. After at least a few days in 0C the frozen hearts are pulverized with a sledgehammer. The fine sample is grinded in a Grindomix (GM 200, Retsch, 5" 3000

rpm followed by 5" 5000 rpm) using the free floating lid in presence of liquid nitrogen (sample should be kept frozen) to obtain a powder .

The powder is then placed in a tube and the tube with powder is chilled in liquid nitrogen and optionally stored at 0C till analysis.

### 4. Analysis

Three gram of the powder are weighed into four tubes of 50 ml . Two tubes are used for the analysis of anthocyanins and two tubes for the analysis of chlorophylls. For measurements of anthocyanins 1.0 M HCl in 50% methanol is immediately added to the two tubes. 5-10 ml/g sample is used dependent on the colour of the sample and extract. The used volume (ml) is noted. The sample solution is mixed by hand and put on ice. A part of the solution is put in a 1.5 ml eppendorf tube and the tube is centrifuged at 4°C, 13000 rpm for 4 min.

Spectra are measured with a spectrophotometer with a band width of 5 nm. A 1 cm cuvette is used.

The spectrum of 360-900 nm is measured and the absorbance at 523 nm (if necessary after dilution with extraction liquid) and the maximum wavelength ( $A_n^x$ ) are determined.  $X_{103x}$  should be close to 523 nm.

Chlorophylls are measured by immediately adding 100% methanol to the two tubes. 5-10 ml/g sample methanol is used dependent on the colour of the sample and extract. The volume (ml) used is noted. The sample solution is mixed by hand and sonificated in an ultrasonic bath for 5 min at 'set degas'. A part of the solution is put in a 1.5 ml eppendorf tube and centrifuged at 4°C, 13000 rpm for 4 min.

The spectrum of 360-900 nm is measured and the absorbance at 665 nm (if necessary

after dilution with extraction liquid) and the maximum wavelength ( $A_n^x$ ) determined.

$A_n^x$  should be close to 665 nm.

The A523 and A665 are corrected to represent the absorbance of a solution of 1 g fresh weight in 10 ml extraction volume. The corrected A523 and A665 are calculated with a correction for weighted sample (in g), extraction volume (in ml) and if necessary dilution using the following formula:

Correction:

$A_{measured} * \frac{X_{tr} \cdot Volume}{A_{corrected} \cdot dilution \cdot weight} = *$

The ratio A523/A665 is calculated.

Table 2a shows the chlorophyll and anthocyanin absorbance and anthocyanin/chlorophyll-ratio observed on lettuce in Aramon, France (sowing 10 January 2002, transplanting 15 February 2002, harvested 25 April 2002). Line 01P.80146 is an offspring line obtained

from plant 99P.38154 by 2 generations of self-fertilisation. Pierrot (Rijk Zwaan) , Darkland (Central Valley), Sierra (Vilmorin) , and Roxy (Enza) are common lettuce varieties.

Table 2b shows chlorophyll and anthocyanin absorbance and anthocyanin/chlorophyll-ratio observed on lettuce grown in Fijnaart, the Netherlands (sowing 21 May 2002, transplanting 10 June 2002, harvested 20 August 2002) . Line 01P.80146 is an offspring line obtained from plant 99P.38154 by 2 generations of self-fertilisation. Pierrot (Rijk Zwaan), Pippo (Rijk Zwaan), Red Rosalita (Johnny's Selected & Cn

O

Orsetti), Da

Roxy (Enza)

Table 2a

H-

I—'

O

H

H-

Cu

3

	id. nr. (br)	
<b>Total anthocyanin/ Total chlorophyll: A523/A665</b>		
	<b>Sierra</b>	
<b>Mean</b>	<b>0,07</b>	<b>0</b>
<b>Stdev</b>	<b>0,02</b>	<b>0</b>
<b>Min</b>	<b>0,05</b>	<b>0</b>

	id. nr. (br)	
<b>Total anthocyanin A523</b>		
	<b>Sierra</b>	
<b>Mean</b>	<b>0,038</b>	<b>0</b>
<b>Stdev</b>	<b>0,019</b>	<b>0</b>
<b>Min</b>	<b>0,028</b>	<b>0</b>
<b>Max</b>	<b>0,072</b>	<b>0</b>
<b>Nr</b>	<b>5</b>	

	id. nr. (br)	
<b>Total chlorophyll A665</b>	<b>Sierra</b>	
<b>Mean</b>	<b>0,570</b>	<b>0,</b>
<b>Stdev</b>	<b>0,189</b>	<b>0,</b>
<b>Min</b>	<b>0,345</b>	<b>0,</b>
<b>Max</b>	<b>0,836</b>	<b>0,</b>
<b>Nr</b>	<b>5</b>	

V<sup>1</sup> Deposit information

The F5-plants 01R.1439, 02R.2413 and 02R.2418 were deposited on 18 July 2005 with the NCIMB, Ferguson Building, Craibstone Estate, Bucksburn, Aberdeen AB21 9YA, United Kingdom under the deposit accession numbers NCIMB 41337, NCIMB 41338 and NCIMB 41339, respectively.

### SANDWICH POEM WITH LETTUCE

Make sandwiches cut in half and stake on platter or serve all ingredients on a platter and have a build your own sandwich.

### SALAD OF RED LETTUCE, CRANBERRY BEANS, LAVENDER QUICKLED CARROTS AND FENNEL PIECE

In a bowl just large enough to hold them, mix the beans with half the dressing and allow to marinate up to a day, but at least toss them to coat well with the dressing. Season with salt and pepper.

When ready to serve, mix the lettuce with the sprouts and add just enough dressing to moisten them. Gently toss and distribute amongst 4 serving dishes.

Use a slotted spoon to lift beans from the dressing and distribute equally into the center of the lettuce and sprouts.

Drain the quickles and mix together, then distribute them onto the salads.

Season lightly with salt and pepper and serve right away.

## BACON, LETTUCE, AND PEACH PIECE

Cook the bacon in a large skillet over medium heat until crisp. Drain on a paper towel lined plate, then cut each slice in half.

While the bacon is cooking, pulse the basil, olive oil, lemon juice, 1/4 teaspoon salt, and pepper to taste in a mini food processor (or finely chop the basil and whisk with the other ingredients) until smooth. Add the mayonnaise and pulse until just combined.

Toast the bread and spread with the basil mayonnaise. Assemble the rest of your sandwich and enjoy!

## ONE LETTUCE AT A TIME FILM

It's a window to the future and it is very important that we reconnect with the earth

## CRISP LETTUCE PIECE

1. Take head of lettuce and trim bottom inch and a half. Toss in the compost bin.
2. Make 3 cuts, lengthwise; then make 4 or 5 horizontal cuts as well. You should now have lettuce pieces that are about 2×2 inches.
3. Toss lettuce pieces into the basket of an OXO Salad Spinner. Place basket under the faucet and wash lettuce (washing the lettuce at this stage instead of at the beginning actually cleans the lettuce better).
4. Once the lettuce is clean place the basket inside the bowl and add about 3 inches of very cold water. If your water isn't cold enough, toss in a few ice cubes. Using your hands, shake the lettuce around the bowl, making sure all the pieces are covered.
5. Place bowl in the fridge—or keep it on the counter if the water is super icy cold—until you are just about to eat (minimum

10 minutes). Remove the basket, drain the water from the bowl, and then place the basket back into the spinner. Then spin 😊

We like to toss our salad with a homemade Dijon vinaigrette (my oldest daughter is now the resident-vinaigrette-maker) and keep it super simple.

## WINTER LETTUCE PIECE

Put in an order!

## KOREAN KIMCHI SCALLION LETTUCE SALAD PIECE

1. Wash, dry and chop romaine lettuce. Place into bowl.
2. Wash, dry and julienne tomatoes. Place into bowl.
3. Wash dry and julienne cucumbers. Place into bowl.
4. Wash, dry and shred 3 green onions. Place into bowl.
5. Drizzle kimchi juice over salad.
6. Toss.
7. Measure about 1 cup kimchi and chop into bite size pieces. Place over salad.
8. Thinly slice one green onion. Sprinkle over top.
9. Drizzle with sesame oil.
10. Serve.

## INSTALLATION FOR PREPARATION OF HEADS OF LETTUCE PIECE

1. Method of preparing lettuce heads of the iceberg type with tightly packed and overlapping leaves or vegetables of a similar structure,

characterised in that

- the base of the sides (C) of the outer leaves (FE) is severed (II) from the head (TS),
- the top of the outer leaves (FE) is sliced (III),
- the sides and the shreds (F') of outer leaves (FE) thus cut are detached (IV), and
- the stalk (TS) is cut off (V) in order to recover the central, edible part (B, B<sub>1</sub> B<sub>2</sub>).

2. Method as claimed in claim 1, characterised in that the top of the outer leaves (FE) is sliced (III, I<sub>2</sub>) essentially in an equatorial plane.

3. Method as claimed in claim 1,

characterised in that the top of the outer leaves (FE) is sliced (III, I<sub>1</sub>) close to the tip of the head (TS).

4. Method as claimed in claim 1, characterised in that the sides and the shreds of outer leaves (C, F') are detached (IV) by blowing (6) on the head (TS).

5. Method as claimed in claim 1, characterised in that the head (TS) to be prepared is rotated in front of the cutting (3, 4, 5, 8, 9) and blowing (6) elements.

6. Method as claimed in claim 5, characterised in that the base of the sides of the outer leaves (FE) is severed and the top of the leaves is sliced whilst blowing (6) onto the head (B) during a same operation.

7. Method as claimed in claim 1, characterised in that the heads (TS) are prepared in a

suspended position.

8. Method as claimed in claim 1, characterised in that after the sides (C) and outer leaves (FE) have been removed and before cutting off the stalk (T),

- the head is severed in order to detach the main part (B<sub>1</sub>) from it, leaving a heart (B<sub>2</sub>) around the stalk (T) following the base of the sides (C') of the new layer of outer leaves,

- these sides (C') are severed and they are detached from the heart (B<sub>2</sub>).

9. Method as claimed in claim 1, characterised in that the stalks (T) are cut off by cutting out the central part (B) or the heart (B<sub>2</sub>) around the stalk.

10. Installation for preparing lettuce heads of the iceberg type with tightly packed and overlapping leaves or vegetables of a similar structure for

implementing the method as claimed in any one of claims 1 to 9, comprising supports for accommodating the lettuce heads to be prepared and conveying them through the different work stations, characterised in that it comprises

- a station (112) for cutting the base of the sides of the outer leaves, equipped with a cutter (103) in front of which the support accommodating the lettuce head is fed,
- a station (112) for cutting off the top of the outer leaves, equipped with a cutter for slicing through the top of the outer leaves,
- a removal station for removing the cut leaves, in front of which the head carried by the support is fed,
- a station for cutting off the stalk, equipped with a cutter which slices through the head (TS) around the stalk (T) in order to detach the head from it and retain the stalk.

11. Installation as claimed in claim 10, characterised in that it comprises

- a station (113) for transversely severing part (B) of the head separated from the outer leaves (FE) in order to cut off the main part (B), leaving only the heart (B2) with the pink sides on the support (101),
- a station (114) for cutting the pink sides.

12. Installation as claimed in claim 10, characterised in that it comprises an air jet device (106) for removing the cut leaves.

13. Installation as claimed in claim 10, characterised in that the cutters (103, 109) for cutting the base of the sides of the outer leaves, those (104, 105) for cutting the outer leaves and that (109) for cutting the heart (B2) are rotating discs.

14. Installation as claimed in claim 10, characterised in that

the cutting stations (113, 114) are equipped with cutters (103-109) in a fixed position and the support (101) with the lettuce head rotates in front of the cutters.

15. Installation as claimed in claim 10, characterised in that the station (115) for cutting the stalk comprises a cutter (107) with a pointed blade which is controlled in translation in order to pierce the lettuce head around the stalk, and a rotary drive means causing the head to rotate relative to the cutter.

16. Installation as claimed in claim 10, characterised in that it comprises

- a carousel (100)
- \* fitted with elements (101, 102) distributed around the periphery for securing the heads to be prepared,
- \* rotating in front of the work stations (110-117) equipped with the elements (103-109) for cutting and removing the sides and

leaves,

- receptacles (131-135) for

\* the waste (F, C') to be discarded,

\* the good parts (B1, B2, B3) to be recovered.

17. Installation as claimed in claim 10, characterised in that it has a U-shaped cutter (104a) for slicing

18. through the outer leaves.

19.

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## STORING LETTUCE PIECE

If you're not going to use the whole head of lettuce, then lay out the washed leaves on paper towels...

... and roll them up and put them in a plastic bag.

To save money, you can use the plastic bags from the produce section of the grocery store.

When lettuce is washed and properly stored, it stays fresh in the refrigerator for about 5 to 6 days. However, note that lettuce that you've washed yourself and stored properly will last longer than pre-washed lettuce.

## CAT IN A LETTUCE HAT PIECE

## PAN-SEARED SCALLOPS & CRUNCHY APPLE SALAD LETTUCE CUPS PIECE

1. Whisk vinaigrette ingredients until fully incorporated. Set aside.
2. Mix salad ingredients except crumbled goat cheese together, set aside. You want to add the goat cheese later because if you mix it too much, the crumbles will disappear into the salad.
3. Heat a dash of oil in a pan on medium-high heat.
4. Prep your scallops: dry them well or they will steam in the pan and not sear properly. Salt and pepper one side.
5. Once your pan is smoking a bit, add the scallops seasoned side down. Then season the other side. Cook ~3 minutes until you get a sear. Don't touch them while they are cooking. You want to leave them alone to caramelize. You can peek after 2.5 minutes to check.

6. Once that side is seared, turn scallops and let them cook for about a minute or two until nicely brown and there is a good sear. Squeeze some lemon on the scallops and shake the pan to mix around a bit. Put scallops on a plate and get ready to assemble the cups. Make sure not to overcook your scallops because they continue to cook when you take them off the heat. When you poke your finger on a scallop, they should still feel springy.
7. Combine the salad, vinaigrette, and goat cheese crumbles together.
8. Place some salad on the lettuce cups. Top with a couple of scallops. You could drizzle a bit more mustard vinaigrette on the lettuce cups and sprinkle a bit more goat cheese. Done.



## AN AFTERWORD: LETTUCE STORY

You can imagine my surprise waking up this morning, sitting up in bed, only to find that I wasn't the only one ready to get up. By my side was a piece of lettuce, all perky green against the white sheets. And what are *you* doing here?

It wasn't clear who of the two of us was being more presumptuous in asking that question *and* expecting an answer – me or the lettuce.

Once my senses kicked in I realised that I had a sizeable advantage, so I took control of the situation. I poked then prodded the insolent little piece of greenery. When it didn't move, I picked it up and started to examine it. It wasn't in such good shape after all. It had clearly taken a crushing during the night; who knows where it had come from and where it had been. I mean, really – these days you just don't know what the young vegetables get up to in the evenings.

Since it refused to answer any of my questions, I gave it an ultimatum: either it leaves of its own

accord by the time I come back from the gym, OR, it's going to be consumed. I left it there, looking all sad and slightly darker green than before.

Halfway to the gym I started feeling sad for it.

After all, this wasn't the first time I'd come across some foreign item in my bed. Let's see, I don't think I've ever had a lettuce before, but there have certainly been crackers, nuts, orange peel, tissues, pencil cases, body lotion, eye cream and the odd wrapper (chocolate wrapper, of course – what were you thinking?). Nothing too exciting.

Occasionally, I recover a pair of socks that the washing machine had consumed some time ago (or it might have been the drier, they always blame each other). If I'm lucky, I wake up with a book in my arms, preferably one that I've been searching for since last Christmas. And if I've hit the jackpot, then, well then I wake up with a whole story scribbled down on some old crumpled up paper covered in dust. Half of it is illegible, half of the other half is nonsense, but at

least the remaining quarter clearly conveys an enthusiasm that the other three-quarters are the work of a literary genius. Needless to say, I still keep those rare transcripts, in the hope that one day I'll be able to decipher the cryptic handwriting. Pearls in an unbreakable shell are still pearls, right? Assuming you believe the inscription which says the shells contain pearls, that is.

The lettuce was still there when I got back from the gym. It now looked more like a piece of rotting avocado, so I dispatched it to lettuce heaven also known as Down Under The Bed. It's a world full of lush flora and vibrant fauna. I'm sure it will be happy there.

P.S. I know *I* don't sleepwalk. How much do you want to bet it's the washing machine? One of these days it better write me that bloody bestseller. *Legibly!*