

**Publication of an application pursuant to Article 50(2)(b) of Regulation (EU) No 1151/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs**

This publication confers the right to oppose the application pursuant to Article 51 of Regulation (EU) No 1151/2012 of the European Parliament and of the Council.

# PRODUCT SPECIFICATION OF A TRADITIONAL SPECIALITY GUARANTEED

**'WATERCRESS, CRESSON DE FONTAINE, BERROS DE AGUA, AGRIAO DE  
AGUA, WATERKERS AND BRUNNENKRESSE'**

**EC No: UK-TSG-0007-0062**

**'United Kingdom'**

## **1. NAME(S) TO BE REGISTERED**

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse'.

## **2. TYPE OF PRODUCT [AS IN ANNEX XI]**

Class 1.6. Fruit, vegetables and cereals, fresh or processed

## **3. GROUNDS FOR REGISTRATION**

### **3.1. Whether the product:**

results from a mode of production, processing or composition corresponding to traditional practice for that product or foodstuff

is produced from raw materials or ingredients that are those traditionally used.

#### **[Provide explanation]**

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' is naturally grown in flowing water to a traditional commercial production method used for over 200 years.

### **3.2. Whether the name:**

has been traditionally used to refer to the specific product

identifies the traditional character or specific character of the product

For centuries even before commercial production commenced in Europe over 200 years ago, the name "water-cress" in the UK, "cresson de fontaine" in France, "berros de agua" in Spain, "agriao de agua" in Portugal, the main production countries, but also "waterkers" in Holland and "brunnenkresse" in Germany has been used to specify this variant of the cress family which is grown and harvested in flowing water. It is universally recognised cress is the plant name and water the descriptor.

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' is an aquatic plant species with the botanical name *Nasturtium officinale*, however in the 1970s the plant was reclassified as *Rorippa Nasturtium-aquaticum* to better reflect its aquatic nature and habitat.

## 4. DESCRIPTION

### 4.1. Description of the product to which the name under point 1 applies, including its main physical, chemical, microbiological or organoleptic characteristics showing the product's specific character (Article 7(2) of this Regulation)

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse', with the botanical name *Rorippa Nasturtium-aquaticum*, is a rapidly-growing, aquatic or semi-aquatic, perennial plant native to Europe, the Americas and Asia, and is one of the oldest known leaf vegetables consumed by humans. It is currently a member of the family Brassicaceae, botanically related to its less famous relatives, garden cress, mustard and radish – all noteworthy for their peppery, tangy, zesty, piquant flavour.

The hollow stems of the plant are floating, and the leaves are pinnately compound. Small white and green flowers are produced in clusters.

Taxonomy:

*Nasturtium nasturtium-aquaticum* and *Sisymbrium nasturtium-aquaticum* L. are synonyms of *N. officinale*; it is also listed in some sources as belonging to the genus *Rorippa*.

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' denotes the product obtained from *Nasturtium officinale*, which was reclassified as *Rorippa nasturtium – aquaticum*, to better reflect the true aquatic nature of the plant and how it grows.

The traditionally grown crop is cut from flowing water and is characterised by soft mid- green, moist leaves which have an unbroken edge and an oval shape. The stems are crisp, slightly paler in colour and can have some lateral roots extending from the joints of leaves to the stem.

#### **Physical characteristics:**

- Alternate, pinnately compound leaves with 3-11 oblong to oval leaflets, these are shiny, dark green, rounded at the tip, smooth without teeth or with wavy toothed margins.
- Creeping or floating stems which are succulent or fleshy
- Smooth fibrous roots which allow rooting to occur anywhere along the submerged stem, primarily at the nodes.
- The plant bears white flowers with 4 petals about 3 – 5mm across, in terminal racemes and in racemes from the axils of the uppermost leaves. Flowers occur during the early summer months.

#### **Chemical composition:**

- 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' is rich in glucosinolates and unique in high expression of the glucosinolate B-phenylethyl glucosinolate which releases phenylethylisothiocyanate (PEITC) when tissue is damaged, during chewing for example. PEITC is responsible for the characteristic pungent flavour and linked to a range of anticancer properties associated with the plant. The peppery taste characteristic is due to the mustard oils inherent in the plant.

Stress affects the levels of PEITC in the plant. If the crop is stressed through low or high temperature, or subject to water shortage the plant produces variant levels of PEITC.

In order to have relatively uniform and consistent levels of PEITC (and therefore relatively uniform flavour and health giving properties) the crop needs stable, stress free growing conditions in terms of temperature, water supply and fertiliser. Having a water based cultivation where constant flowing water is supplied throughout the life cycle of the plant is the ideal way to maintain temperature; the flowing water cooling the crop on hot days and warming it on cold days.

By comparison a soil grown crop does not have controlled temperatures. Soil and leaf temperatures can reach 40°C on hot sunny days and in frosty weather the leaves can suffer freezing damage. These variable levels of stress will result in an irregular PEITC production by the plant, meaning a variable flavour and health benefit delivery.

To be traditionally grown, the crop must be grown in pure flowing water. Soil grown cress which has entered the market over the last few years is grown under plastic or glass in the same way lettuce or any other salad can be grown. Though the method of production is entirely different from water grown 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse', soil grown cress is being called 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' because it looks the same and can be passed off as water grown 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse'. However it has not been produced in the same time honoured manner; it is not a traditionally produced speciality product, but simply one of many conventionally farmed leafy salads.

Samples of land grown product have been subjected to comparative testing against the traditionally grown crop. The first test was conducted by Wirral Sensory Services in October 2008. The assessment was conducted by 100 consumers, all regular purchasers of prepared salad products, with a cross section of age groups and socio-demographics. The respondents were given a sample of each product to taste and were asked to score them on a 10-point hedonic scale for a number of key parameters. The products were de-branded and were presented according to a statistical design to avoid any potential bias. The respondents were asked to pay special attention to the pepperiness of the 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' by also scoring them on a five point diagnostic scale.

The results are shown under the headings Hedonic Results and Diagnostic results below:

#### Hedonic Results

RESULTS (Mean score where 1 = Extremely Unacceptable, 10 = Extremely Acceptable)

Scores out of 10: Soil Grown Water Grown

Colour 7.89 8.03

Size of sprigs 7.54 7.72

Pepperiness 6.12 6.55

Texture 7.29 7.41

## Diagnostic Result

RESULTS (Mean score between 1 and 5 where 3 = Just Right)

Pepperiness	Soil Grown	Water Grown
1 = Nowhere near peppery enough	2.50	3.13
5 = Far too peppery		

A further sensory evaluation was conducted in June 2009 by Campden Food Research Association.

This was a triangle test, aimed at establishing difference between 2 samples, where both types, land and water grown were presented, one in duplicate, to a panel of 24 trained assessors asked to identify differences.

20 of 24 trained assessors identified the land cress as different. The criterion most mentioned by the assessors was flavour. Comments were made as to land grown cress having less flavour; weaker flavour; less peppery flavour. Some comments were also recorded as to the water grown sample having darker leaves.

These two assessments demonstrated that on both occasions a professionally conducted evaluation of land versus flowing water identified differences, and when preference was sought, identified 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' as superior – on organoleptic qualities alone.

### **Microbiological properties:**

Derived from the environment in which the plant is grown; commercially grown in flowing spring water the crop acquires an epiphytic microbial population characteristically high in benign *Pseudomonad* sp.

Characteristically 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' has a mustard after taste; it is peppery, hot and slightly bitter. The plant is grown in pure flowing water of high microbiological quality. 'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' is a plant that has been unaltered by selection and breeding in terms of morphology and flavour, and today it still looks identical to illustrations of the plant dating to Roman times.

## **4.2. Description of the production method of the product to which the name under point 1 applies that the producers must follow including, where appropriate, the nature and characteristics of the raw materials or ingredients used, and the method by which the product is prepared (Article 7(2) of this Regulation)**

'Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse' must be grown in and harvested from flowing water. Seed may be sown on a suitable substrate in a propagation facility and the seedlings transferred to the production beds.

The crop can grow all year round in specially constructed beds in northern Europe partly protected from winter cold weather by the flowing spring water which rises from natural springs or boreholes at a constant 10 to 11°C, and in summer from the cooler temperature of the water. The temperature of the water has less affect on southern Europe production; however temperature will benefit the crop on cold mornings during the winter and summers high temperatures.

**Water Supply:**

Traditionally the source of water has been from deep mineral rich natural springs or boreholes of either natural flows or pumped, however other sources are acceptable if of a suitably high microbiological quality (target zero Ecoli, tolerance, 100cfu/100ml; target zero listeria, tolerance 100cfu/100ml, zero Salmonella, zero STEC) and free from surface water contamination. The water must be of a quality appropriate to the production of a minimally processed food, meaning one that may be consumed without cooking.

**Bed Design:**

The geographical positioning of the production beds will usually be dictated by the source of water in valley basins and the outlet to the adjoining stream or river. The production beds are constructed with impermeable sides, an incline of approximately 1 in 300 from the point water enters the bed, and in such a way as to preclude surface water or run-off from adjoining land. Traditionally the incoming water is channelled and regulated into the individual beds by valves, taps or simple openings in the inlet carrier wall. More modern farms have been constructed in such a manner as to allow for pressurised inlet water systems. Bed area varies depending on location and country but typically could be 10m wide by 100m long.

The complete production area must be protected from the ingress of all animals, normally achieved by a substantial stock proof fence which is at least 2 meters high and a minimum of 3 meters from the production area. All surface or run-off water must not be allowed to enter the site which can be achieved by ditches or bunds ahead of the fence. There must be no permanent muddy areas which could be a habitat for the mud snail.

**Production Methods:**

At least annually a new crop should be established from seed to prevent the build up of viruses, some of which are seed-borne. Seeds are either sown directly onto the bed bases, or more usually sown onto compost, or similar material, in a propagation facility and raised to the first true leaf stage (approx. 3-5 cm high). Early summer cropping will require new crops from seed to overcome the natural flowering period which occurs during this period. During other months product can be harvested from re-growths, a process of allowing the harvested crop to regenerate into a new crop. With a seedling crop, the aim is to establish between 8,000 to 10,000 plants per meter<sup>2</sup>, with the harvesting density likely to be approximately 2,000. Many growers produce their own seed by allowing some crop to flower and set seed, however seed is available from Seed Companies.

Direct seeding can be hand or machine spread onto the production beds, equally the seedlings produced in a propagation area can be planted by hand or machine, at an appropriate density over the bed base which is capable of retaining nutrient enriched moisture allowing for early root infiltration and anchorage.

Thereafter nutrient enhanced water is allowed to flow over the base where by the crop derives the necessary minerals and trace elements essential for growth; the flow of water is increased as the crop matures to meet the needs of the crop.

Standard horticultural fertilisers with high phosphate content are used to supplement the nutrients from the bed base and water, and are applied as appropriate depending on crop requirements.

### **Harvesting:**

‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ is cut for sale when it is 10 to 15 cm long and sold bunched and unwashed or washed in packs. The traditional bunched product is characterised by pale stems stripped of leaf and root for 5 or 6 cm and held together by a rubber band or tie, above which dark green leaves form the “head” of the bunch. The more popular washed packs are of separate stems of ‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ and are generally less mature than in the bunch, with smaller leaves, arranged in a random manner to form a tangle of stems, petioles and leaves.

### **4.3. Description of the key elements establishing the product's traditional character (Article 7(2) of this Regulation)**

The traditional character of ‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ is enshrined in its production method and has been associated with flowing water for thousands of years; historically the crop has always been associated with aquatic production. Hippocrates, the founder of modern medicine is recorded to have chosen the site for the world’s first hospital, on the island of Kos, close to a stream suitable for cultivating the plant which he regarded as essential to the treatment of his patients. In all countries, traditional ‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ must be grown in flowing water.

Pure spring waters rising from underground strata contain all the minerals needed for growth, however there is normally a lack of phosphorus. In northern Europe this was fortuitously available as a slow release phosphate fertiliser in the form of basic slag, a by-product of the traditional steel making process. For almost 200 years the crop was grown using pure spring waters supplemented by bed base applications of basic slag which supplied the phosphate fertiliser and trace elements the crop could not find in the flowing water. Today the steel making process has changed and basic slag is no longer available. Consequently, slow release commercial phosphate fertilizers are now used instead.

By the late 1800’s ‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ was a significant source of employment and revenue, the crop was being supplied to the major conurbations throughout northern Europe. As an example in the UK the railway was extended to Alresford, Hampshire to carry upwards of 30 tonnes a week to the London markets. The restored steam railway is still known as “The Watercress Line” today.

Traditionally grown, it is cut from pure flowing water, and is characterised by soft mid green, moist leaves of an oval shape. The stems are crisp and it can have some lateral roots extending from the joints of leaves to the stem. The plants have a characteristic mustard after taste; peppery, hot and slightly bitter.

Being grown and harvested from pure flowing water is what gives the plant its unique quality. It is a method of commercial production that has remained essentially unchanged since it was first established in the early 1800’s, although the method of growing ‘Watercress, Cresson de Fontaine, Berros de Agua, Agriao de Agua, Waterkers and Brunnenkresse’ in flowing water dates back to Roman times.