











The food professional's guide to California prunes



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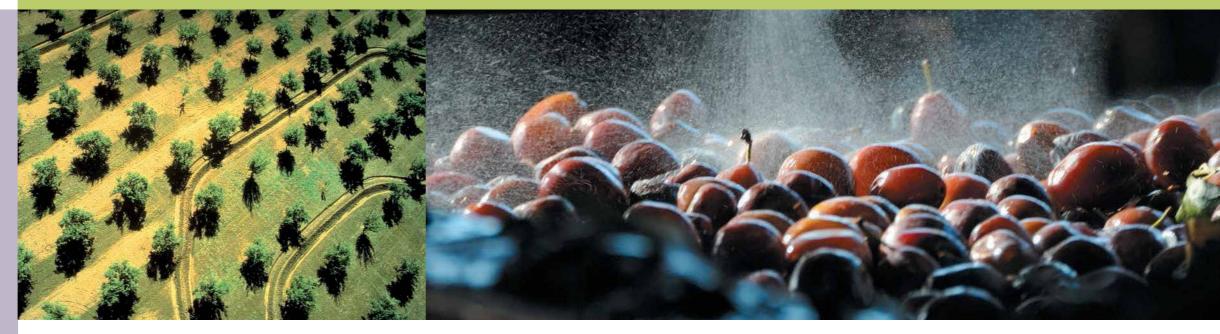


Natural, nutritious and versatile, California prunes are simply sunripened, juicy plums that have been carefully dried to remove some of the water. They contain similar levels, prune for fresh plum, of fibre and carbohydrate, with the added bonus of convenience and year-round availability. Of consistently high quality, California prunes fit today's trends towards healthier eating in so many ways: ideal as a healthy low fat snack, a surprisingly versatile cooking ingredient and a functional addition to many manufactured food products. This book is designed to provide food professionals with the important information they may need about California prunes. Whatever your role in the food industry, be it chef, diet or nutrition expert, manufacturer or product developer, we are sure you will find the information interesting and useful.

The California Prune Board represents the prune growers and packers of California, one of the most quality-focused agricultural industries in the world. Ours is the product of generations of growing expertise, dedication to innovation and care for our environment: a product that is truly 'designed in California'.

For more information, including further technical or nutritional data and for product samples, please get in touch using the contact details on the back of this book, or visit www.californiaprunes.co.uk CONTENTS
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Quality and care are at the heart of everything we do





Our absolute commitment to quality, from all those involved in the growing and packing processes, ensures that our second-to-none standards are constantly maintained. Prune plums are one of the few fruits allowed to ripen fully on the tree before they are picked, so fruit firmness and natural sugar content determine the harvesting date. With more than 150 years of experience, California plum growers have developed an unrivalled expertise in judging the precise moment when the fruit of each tree is at its peak.

Nowhere in the world produces prunes of higher quality than California. The combination of fertile soil and temperate climate has contributed to making California the US leader in agricultural production. Those same plentiful natural resources have helped California plum growers to grow the finest quality fruit and become the leading producers of prunes worldwide. Maintaining responsibility for this unique supply status demands absolute dedication from our region's expert growers and packers, who are totally committed to producing a consistently world-class product.

It takes rich, fertile valleys, warm sunshine and a controlled abundance of water supply in a unique combination to produce the best, consistent quality prunes in the world.

QUALITY AND CARE

prunes. designed in california.

From the world's largest plum orchards to the world's most advanced prune processing facilities



Unlike some other prune producing countries (where plums are knocked off the tree by a stick and can spend several days lying in the dust of the orchard floor before being swept from the ground), Californian prune growers harvest their orchard-ripe plums directly off the trees purely by mechanical means, ensuring that the fruit never touches the ground.

The plums are washed in spring water and put into carefully controlled dehydration on the same day they are harvested. That means we can vouch for the perfect quality of each and every California prune, every time.

The process of drying plums was perfected in California, and today California's state-of-the-art storage and packing plants are the largest and most advanced in the world. Immediately after harvesting, the washed fruit is placed on wooden trays and dehydrated in a series of strictly monitored operations. Super-sensitive thermostats ensure production of uniformly high quality prunes and that all the fruit's natural goodness is retained when dried.



Each tree's fruit is gathered in a matter of seconds, and it takes just 30 days to harvest the entire 65,000 acres of the California prune orchards.







Our commitment to a sustainable industry

We are delighted that consumers, distributors and retailers are becoming more environmentally aware and looking favourably on industries which demonstrate they have corporate social responsibility and are taking proactive steps to reduce the impact of their operations upon the physical environment.

As the world's leading producers of prunes, The California Prune Industry takes its environmental responsibilities very seriously. We work hand in hand with nature to produce a perfect quality product and we depend upon the natural resources of our state – fertile earth, warm sunshine, clean air and fresh water – to develop our crop. Because our industry depends on the natural balance of our environment, constant reinvestment in upgrading and modernising ensures that our processes have minimal impact upon our surroundings and are as efficient and sustainable as possible.

We started our sustainability initiatives back in 2005, by focusing on pollution reduction, product stewardship – lowering the environmental impact of our products, maximising recyclability and after-use disposal – and clean technology, ensuring the energy efficiency of our machinery and processes.



Our approach to sustainability begins in our orchards



SUSTAINABILITY CHECKLIST

Just some of the initiatives our growers and processors are undertaking...

- Careful monitoring and control of irrigation to ensure efficient water usage
- Installing massive solar power systems to reduce electricity usage
- Reduction in water used in processing and reduction in waste water
- Reducing the amount of energy used to produce steam, and recycling steam in our plants
- Developing use for our by-products, such as for cattle feed
- Deriving the natural oil from the pits that has multiple uses
 Installation of high efficiency lighting in our plants to reduce electricity usage
- Recycling packaging waste reducing landfill
- Lightweight packaging over 10% reduction in tree fibre consumption
- Converting packaging to 100% recyclability.

Our industry has developed an Integrated Prune Farming Practices (IPFP) standard which employs the most recent agricultural advances and best practice. For example, pests are carefully monitored to determine whether pest control is necessary, rather than simply assume that it is. In the event that pesticides are needed, we actively seek to use only reduced-risk materials. Irrigation is carefully controlled by monitoring soil and tree moisture status and applying

only the water that is actually needed. Fertiliser applications are based on tissue sampling from our trees to determine which nutrients are needed and in what quantity, to avoid over-fertilising. Across our industry we have also made significant achievements in reducing water usage in our production facilities, reducing the energy used for pumping water, and reducing and recycling waste water.

Carefully controlled irrigation at the start of summer supplements the winter rainfall in the California valleys, ensuring the trees receive just the right amount of water they need to produce consistently perfect fruit.

A commodity we have in abundance in California is sunshine, and our industry continues to invest heavily in solar power as technology develops and produces further advances, such as tracking the sun to maximise the power we can harness.

The growers and processors of California prunes are united in their commitment to making our industry as energy-efficient and friendly to our environment as possible, and sustainable for future generations.

Ours is one of nature's naturally nutritious products



As awareness of the correlations between eating and health continues to grow, and diet-related conditions such as obesity and cardiac health are issues in many countries, California

prunes are a convenient and naturally nutritious component of a healthy daily diet. For more than 25 years our processors have been innovative in developing new ways in which consumers can

For over 25 years California has played a pivotal role in developing the prune market and supporting the whole industry in communicating the nutritional benefits of prunes.

enjoy the quality and goodness of prunes, from convenient prune snack packs to a wide variety of product formats, including chopped prunes, concentrated extracts, purées, pastes, powder and oil.

The California prune industry believes strongly in sharing its learnings with its trade partners around the world and in developing close working relationships to continue to increase awareness, understanding of the health benefits of prunes.



A convenient source of vitamins and minerals



Potassium

Prunes are a good source of potassium. Potassium contributes to normal muscular and neurological function and contributes to normal blood pressure. Prunes are high in potassium, providing 732mg per 100g. A 100g serving is 10-12 prunes which would supply 1/5 (20%) of the recommended adult daily potassium needs.

Copper

Prunes are a source of copper, which contributes, for example, to normal skin and hair pigmentation and normal iron transport in the body.

Salt (Sodium chloride)

Prunes are (naturally) salt-free, so daily snacking on prunes in place of those typical salty snacks will help you to cut your salt intake, as well as provide you with a filling between meal pick-me-up.



The full nutritional content of prunes is given in the table below

Vitamin and mineral content of prunes

	Prunes (per 100g)
Vitamin C/ ascorbic acid (mg)	0.6
Thiamin/ Vitamin B1 (mg)	0.051
Riboflavin/ Vitamin B2 (mg)	0.186
Niacin/ vitamin B3 (mg)	1.882
Pantothenic acid (mg)	0.422
Vitamin B6 (mg)	0.205
Folate (µg)	4
Choline (mg)	10.1
Betaine (mg)	0.4
Vitamin B12 (mg)	0
Vitamin A (µg)	39
Retinol/ Vitamin A (μg)	0
Vitamin E (mg)	0.43
Vitamin K (µg)	59.5
Calcium (mg)	43
Iron (mg)	0.93
Magnesium (mg)	41
Phosphorous (mg)	69
Potassium (mg)	732
Salt (g)	0.005
Zinc (mg)	0.44
Copper (mg)	0.281
Manganese (mg)	0.299
Fluoride (mg)	4
Selenium (mg)	0.3



California prunes for today's lifestyle



Other benefits of California prunes

What's a good portion of prunes?

Californian prunes are so delicious, it's easy to snack on them, but you've no need to worry as research has shown that consuming up to 100g (that's 10-12) prunes daily does not cause any negative side effects in the gut (Edralin 2004).

A standard portion is generally taken as around 4-5 prunes, that's 40g, which still provides you with around one sixth of an adult's recommended daily intake for fibre.

3 California prunes = 1 of your '5 a day'

Just three sweet and juicy California prunes constitutes one portion of the recommended '5 a day' fruits and vegetables as well as providing a tasty, filling snack that contains virtually no fat (just 0.38g per 100g) or salt.

Prunes - low fat, low GI, low salt

Prunes are a great little fruit as they're naturally free from fat, saturated fat and salt. Too much fat and saturated fat in your diet may lead to obesity and insulin resistance, and can also increase blood levels of the 'bad' cholesterol which can cause heart disease. Too much salt is linked to increased risk of high blood pressure and strokes. So replacing high fat, high salt snacks with prunes is a great way to keep the fat and salt levels down.

There's another good reason why California prunes make excellent snack foods. Prunes have a low Glycaemic Index (GI) of 29. The Glycaemic Index ranks foods according to how quickly they release sugar (glucose) into the bloodstream when they are digested. Foods with a low GI, like prunes, release their sugars more gradually into the blood stream. Another way to measure the overall glycaemic effect of a portion of food is to look at the Glycaemic Load (GL), which is calculated from the GI and takes account of the carbohydrate content of the food too. The Glycaemic Load of prunes is also low at 10 per 60g portion (Foster-Powell 2002).

An ideal carbohydrate snack for sports

Prunes have a low GI and contain naturally occurring sugars to provide energy, making them an ideal snack when playing sport. Prunes provide around 64g carbohydrate per 100g. Prunes contain only naturally-occurring sugars such as sorbitol, with no added sugar – 100g of prunes provide 38g sugar. Two thirds of the sugar in prunes is in the form of glucose with most of the remaining third provided by fructose, and very little sucrose is present.

California Prunes – the easy-to-share versatile snack High quality California prunes are very tasty, making an ideal snack for sharing – sweet, convenient bite sized fruit that's high on fibre and low on fat and salt.

Versatile California prunes also make a tasty addition to cereals, fruit smoothies, yoghurts, rice pudding, casseroles and even stirfries.

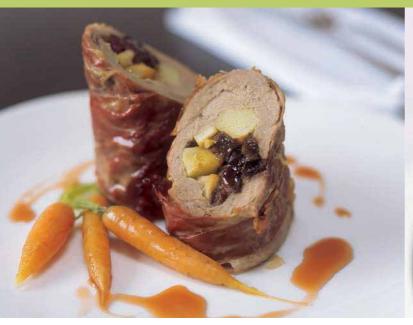
It's now accepted that what we eat will have a bearing on our physical health, but there is now increasing evidence linking what we ea with our mental health, including mood and general wellbeing. Ensuring you eat a varied and balanced diet based largely on adequate amounts of complex carbohydrates, essential fats, high quality protein, vitamins, minerals and wate is the best way to ensure a balanced mood and feelings of well being. So snacking on California prunes could contribute to improving our mental emotional and physical wellbeing when included in a healthy balanced diet along with other fruit raw vegetables, wholegrains, nuts, lean meat and oily fish.

ource: Feeding Minds: the impact of food on mental health. Iental Health Foundation. January 2006 (www.mentalhealth. rg.uk)

Nutritious, versatile and inspiring

Prunes have a natural affinity with many other foods, both savoury and sweet. As well as adding flavour and texture, their inclusion adds fibre and minerals, yet virtually no fat, making prunes an ideal 'balancing' ingredient. Prunes also contain a unique blend of all natural ingredients such as pectin and sorbitol, which give them fat-like (though fat-free) characteristics of enhancing flavour; so prunes actually help to bring out the flavours of other ingredients.

For the chef looking to source fine quality ingredients for their kitchens and to present their customers with dishes which are attractive, nutritious and full of flavour, California prunes are an essential store cupboard ingredient. Prunes have been popular in the cooking of many cultures for centuries, and today's increasing trend towards healthier eating ensures that they are just as relevant today. Research shows that people in the UK are increasingly aware of the nutritional benefits of prunes and so have a positive attitude to their inclusion on menus. From classic pairings such as with pork or game to less familiar matches, such as with seafood or in a sorbet, California prunes are an inspiring ingredient.





California prune processors have invested considerable time and resource in developing a full range of prune-derived ingredients for improving the taste, consistency and nutritional qualities of a wide range of manufactured food products.





Whether in the form of whole fruit, diced fruit, concentrated extracts, purées, pastes, powders or oil, our processors have a specification that will facilitate the efficient and economic production of a manufacturer's final products. Our dedication to technical excellence and quality makes us uniquely qualified to meet global food manufacturers' demand for pure and functional ingredients.

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A California prune product for every application



The range of prune and prune-derived products we currently supply includes:

PITTED PRUNES

Our processors produce high quality prunes. They are perfect for serving whole or diced in prepared dishes, and excellent for dairy and confectionery. Our pitted prunes are currently available in a range of eight different graded sizes, each produced with the same consistent quality and care.





CHOPPED / DICED PIECES

Chopped prunes are simply chopped pieces of whole prunes. Diced pieces are made from extruded prune paste. Both products fit a wide variety of applications, such as baking, dairy, chocolate coating, fruit blends or mixes, and are 100% natural with no added ingredients.



PASTES AND PUREES

Our pastes and purées can be substituted for oil and fat, retain moisture and enhance flavour. They are stable at cool storage conditions and have an extended shelf life. Applications include baking, confectionery, sauces and meat.



CONCENTRATE

This is a pure water extract of prunes with a multitude of uses. The resulting product is self-preserving and does not need refrigerated storage. 28% of the total sugar is natural sorbitol, while it contains less than 1% sucrose. Prune concentrate has applications in baking, confectionery, sauces and meat.



PRUNE POWDER

Prune powder is made from whole dried plum solids dried to a very low moisture and mixed with an anti-caking agent. It contains an exceptional natural blend of soluble and insoluble fibre, combined with naturally occurring sorbitol. The powder can be substituted for fat, retains moisture and acts as a natural pathogen suppression agent. Numerous applications include baked goods, confectionery, sauces and meat.



PLUM KERNEL OIL

Plum kernel oil is pressed from the plum stones or kernels. It has a golden colour and a complex and rich aroma with a very fruity top note and accents of almonds and marzipan. It is rich in unsaturated fatty acids and monounsaturated fatty acids and ideal for high temperature frying. As well as its obvious uses in the kitchen, manufacturing applications include baked goods, sauces and marinades and even skin care.

No other prune industry in the world offers such a variety of consistently high quality prune and prune-derived products.



Innovation and inspiration for food developers

Around the world, food manufacturers are discovering the advantages of using California prune-derived products in their recipes and processes. Here are just some of the categories where prunes can be applied.

BAKED GOODS

Prunes naturally contain a mix of components which allows prunes to act as a fat substitute, inhibit mould development, add humectancy and extend shelf life.

MEAT

Prunes contain naturally high levels of fibre and sorbitol and have been shown to have one of the highest antioxidant levels of the leading common fruits and vegetables. These components allow prunes to retain moisture, suppress the growth of various pathogens, enhance savoury flavours and control the development of lipid oxidation or warmed-over flavour in processed meat.

SAUCES

Prunes do not impart a flavour but rather enhance and round off other food flavours in a recipe or formulation. This makes prunes the perfect ingredient for complete flavour systems, whether it's sweet or savoury sauces, marinades or rubs.



SNACK PRODUCTS

Prunes contain the perfect balance of nutrition and sensory enhancement. Rich in fibre and sorbitol, they help to reduce fat, calories and added sugar in snack products, whilst improving texture, flavour and overall eating qualities. Prunes contain no added sugar, supplying only naturally occuring sugar sweetness.

CONFECTIONERY

Fat, carbohydrates and calories can be controlled or reduced when using prunes as fillings or icings. With a low Glycaemic Index and low Glycaemic Load, prunes provide confectionery manufacturers with a natural alternative to improve overall nutrition.

DAIRY

Prunes are ideally suited in both taste and form for use in a wide range of dairy applications. The mellow, fruity, caramelised flavour with notes of vanilla blends well with yoghurt, cheese and ice cream. Prunes are already widely used by dairies to enhance the flavour of yoghurt products as well as provide digestive health benefits.

For more information about California prune-derived products, including nutritional data and samples, please contact us.

California prune processors put their considerable knowledge and development expertise at the disposal of food developers and manufacturers around the world, in the cause of constant innovation and improvement



California prune purée makes magnificent muffins... naturally

THE TRIAL: the extensive skills and knowledge of Colin Sneddon of Artisan Bakery Concepts was enlisted to perform the trials in his bakery laboratory. California prune purée was incorporated into chocolate muffins to evaluate the impact on nutritional profile, moistness and softness of the crumb, flavour and shelf life. The prune purée was added at a dosage of 3.7%.

THE METHOD: the muffins were mixed using a generic Hobart mixer and baked at 170°C in a standard rack oven for 23 minutes, then fully cooled and wrapped immediately in non-permeable film to ensure quality and texture were maintained. They were stored at an ambient temperature between 15 and 20°C and analysed organoleptically by an independent panel.



THE RESULTS: analysis of the variant with the California prune purée in the brownie demonstrated the following attributes:

- Improved nutritional profile. Muffins with prune purée have: 32% less fat, 13.5% less calories and 36% less salt than the control.
- Flavour enhancement, due to the high malic acid content.
 This provides the ability to reduce the chocolate ingredients in the prune purée variant (chocolate chips and cocoa powder were reduced by 2.2% and 0.5% respectively), and allows for no added salt.
- Increased softness of the crumb.
- Extended shelf life. The prune purée significantly improves softness through shelf life as the muffins stayed soft in ambient conditions for 8 days and beyond.
- No on-cost.

Clear and measurable benefits of using California prune purée in muffins:

- Fat replacement
- Improved nutritional profile
- Increased softness of the crumb by way of sorbitol
- Reduced requirement for adding salt, through flavour enhancing properties, due to high malic acid content
- Extended shelf life
- No on-cost

Application Advice

California prune purée is easy to use and when added to existing bakery recipes for the replacement of butter, sugar and/or chocolate, we would recommend a dosage of 3.5% of total weight. The application advice should only be seen as a guideline and the final amount of ingredients to remove will depend on the recipe.

RECIPES	CALIFORNIA PRUNES		CON	TROL
Ingredient	Quantity (g)	%	Quantity (g)	%
Water (ml)	220	20.36	220	20.19
Muffin Flour	215	19.90	215	19.73
Caster Sugar	160	14.81	200	18.36
Bake stable Choc Chips	145	13.42	170	15.60
Whole Liquid Egg	125	11.57	125	11.47
Whole Milk	50	4.63	-	-
Vegetable Oil (ml)	40	3.70	80	7.34
Prune Purée	40	3.70	-	-
Maize Starch	35	3.24	-	-
Belgian Cocoa Powder	30	2.78	35	3.21
Emulsifier	8	0.74	16	1.47
Milk Powder	-	-	12.5	1.15
Gemini Encapsulated Baking Powder	12.5	1.16	12	1.10
Salt	-	-	3	0.28
Xantham Gum	-	-	1	0.09
Stabilser (Sodium Stearoyl-2-Lactylate)	0.02	0.01	0.02	0.01
Total	1080.52	100	1089.2	100

Day	1	2	3	4	5	6	7	8		
CONTROL										
Moisture	Excellent retention of softness	Acceptable product	Acceptable product	Drying and staling	Crumbly dry product	Crumbly dry product	Poor quality product	Poor quality product		
Crust	Soft and shiny	Soft and shiny	Change of colour and drying of crust	Change of colour and drying of crust	Thick dry crust	Thick dry crust	Crust becoming detached from surface	Crust separation		
Structure	No change recorded	No change recorded	No change recorded	No change recorded	No change recorded	No change recorded	Crumbling	Severe crumbling		
Visible Mould	None	None	None	None	None	None	Surface mould recorded	Surface mould recorded		

SHELF LIFE ANALYSIS

CALIFORNIA PRUNES								
Moisture	Excellent retention of softness	Slight drying but still moist	Slight drying but still moist	Acceptable product	Acceptable product			
Crust	Soft and shiny	Soft and shiny	Slight dulling	Slight dulling				
Structure	No change recorded	No change recorded	No change recorded	No change recorded				
Visible Mould	None	None	None	None	None	None	None	None

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California prune purée makes a better brownie... naturally



THE TRIAL: California prune purée was incorporated into an indulgent chocolate brownie to evaluate the impact on nutritional profile, shelf life, crumb softness and flavour enhancement. The prune purée was added at a dosage of 4.24%.

THE METHOD: the brownies were mixed using a generic Hobart mixer and baked at 155°C in a standard rack oven for 35 minutes, then fully cooled and allowed to set prior to cutting. The brownies were packaged and sealed immediately in non-permeable film to ensure quality and texture were maintained. They were stored at an ambient temperature between 15 and 20°C & analysed organoleptically by an independent panel.

THE RESULTS: analysis of the variant with the California prune purée in the brownie demonstrated the following attributes:

- Increased crumb softness
- Extended shelf life. The California prune purée significantly improves softness through shelf life as the brownies stayed soft in ambient conditions for 4 weeks and beyond.

- Flavour enhancement, due to the high malic acid content. This
 provides the ability to reduce the chocolate ingredients in the
 California prune purée variant.
- Improved nutritional profile. Brownies with California prune purée have: 11% less fat, 13% less saturated fat, 18% less sugar and 9.2% less calories than the control.
- Cleaner label there is no need to use the humectant Glycerine in the California prune purée variant, as the sorbitol in the prune purée has softening properties.
- Reduced requirement for adding salt.
- Improved appearance, through the natural glossing of the brownies.
- No on-cost, in fact the variant with California prune purée gives a cost advantage.

Clear and measurable benefits of using California prune purée in brownies:

- Improved nutritional profile
- Extended shelf life as sorbitol keeps products soft and moist
- No on-cost
- Increased softness of the crumb by way of sorbitol
- Flavour enhancement through high malic acid content
- Reduced requirement for adding salt, through flavour enhancing properties
- Improved appearance

Application Advice

California prune purée is easy to use and when added to existing bakery recipes for the replacement of butter, sugar and/or chocolate, we would recommend a dosage of 3-5% of total weight. The application advice should only be seen as a guideline and the final amount of ingredients to remove will depend on the recipe. Although no salt was added to these recipes, we would also recommend that salt be reduced.

RECIPES	CALIFORN	IA PRUNES	CON	TROL
Ingredient	Quantity (g)	%	Quantity (g)	%
Caster sugar	1050	21.19	1500	26.19
Melted Dark Chocolate	1050	21.19	1320	23.10
Plain Flour	1000	20.18	1000	17.46
Butter	500	10.09	700	12.22
Eggs (liquid pasteurised)	425	8.58	336	5.86
Cocoa Powder (Belgian Dark)	250	5.05	400	7
Water	230	4.64	-	-
Prune Purée	210	4.24	-	-
Single Cream	170	3.43	200	3.49
Glycerine	-	-	200	3.49
Dried Egg Yolk	50	1.01	50	0.87
Baking Powder (Standard single Action)	20	0.40	20	0.34
Total	4955	100	5726	100

SHELF LIFE ANALYSIS

Date Trialled 11/7/2011		18/7/2011	25/7/2011	1/8/2011			
CONTROL							
Moisture	Excellent retention of softness	Slight Dryness	Very Dry	Poor quality product			
Crust	Traditionally Firm	Traditionally Firm	Crust becoming detached from surface	Crust separation			
Structure	No change recorded	No change recorded	No change recorded	No change recorded			
Visible Mould	None	None	None	None			
CALIFORNIA PRUNES							
Moisture	Excellent retention of softness	Soft and moist	Soft and moist	Soft and moist			

Moisture	Excellent retention of softness	Soft and moist	Soft and moist	Soft and moist	
Crust	Very shiny attractive crust	Very shiny attractive crust	Crust becoming slightly softer but not unpleasant	Crust becoming slightly softer but not unpleasant	
Structure	Structure No change recorded		No change recorded	No change recorded	
Visible Mould	Visible Mould None		None	None	

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For further information on our California prune products, their manufacture and how to obtain them please contact:

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