

GREEN ASPARAGUS GROWING METHODS



Jamie Petchell, Global Plant Genetics, January 2019

Contents of Presentation

- Introduction to Global Plant Genetics
- Asparagus at Global Plant Genetics
- Asparagus in the World
- Opportunities for Asparagus in Portugal
- Production Environments
- Plant Material
- Varieties
- Asparagus Production in this Region
- The Future

Introduction to Global Plant Genetics

- UK based business operating in asparagus, berries and grapes
- Representing 12 world-class breeders from 7 countries
- Global customer base across all major asparagus and berry producing regions
- Focus on the development and distribution of improved varieties across the range of crops



Asparagus at Global Plant Genetics

- Represent 5 leading asparagus breeders
- Focus on seed and plant supply
- Customers are plant nurseries and large growers
- Specialist focus on the development of asparagus in new growing locations
- Key expertise in trials, variety selection and establishment of new plantations
- Industry leading technical support

Climatic Regions for Asparagus

Cold / Temperate Asparagus Production

- Naturally short season
- Innovative techniques to extend harvest
- Sales within country or short distance exports

Warm / Hot Asparagus Production

- Longer harvest seasons
- Potential production year round
- Mainly produced for export markets

World Asparagus Trends

- Increasing demand globally
- Consumer driven and growers / marketers need to respond
- Approx. 200.000 hectares of asparagus worldwide *
- 25-35% in each of Europe, The Americas and Asia
- 65% green asparagus
- Significant increase in last 10 years from <50%
- Trend expected to continue

*data collected from a range of sources, mostly through personal communication

Asparagus Opportunities in Portugal

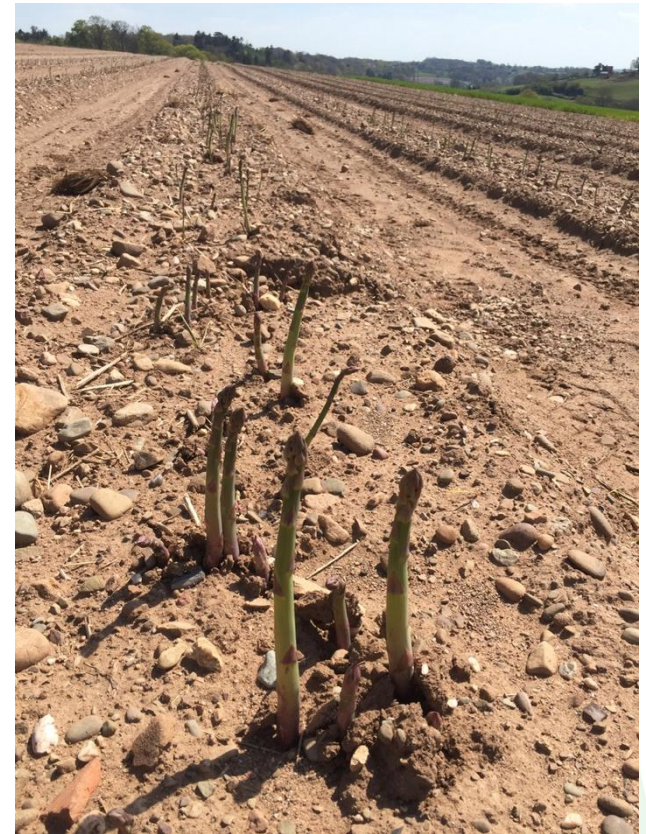
- Potential for early season European asparagus
- Season of supply from February to May
- Import substitution of asparagus from Mexico and Peru
- Reduced transport costs
- Faster to market than product from the Americas for improved freshness
- Develop a local market for the product

Production Environments

- Outdoor production
- Mini tunnels
- High tunnels
- Glasshouse
- Forced production

Outdoor Production

- Standard technique
- Natural harvest season
- Plant material – crowns, modules and direct seeding
- Plant density 25-40.000 plants per hectare
- Hand and machine assisted harvesting
- Irrigation used as required by conditions



Mini Tunnels

- Increasingly common technique
- Improved earliness of 2-4 weeks
- Plant material – crowns, modules and direct seeding
- Plant density 25-40.000 plants per hectare
- Hand and machine assisted harvesting
- Irrigation can be necessary during harvest in dry seasons
- Potential yield increases
- Additional harvest costs per kilo



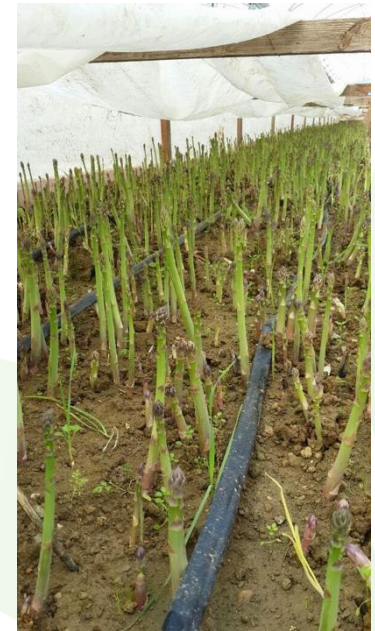
High Tunnels

- Specialist production system
- Potentially 4 weeks earlier
- Possible to combine with mini-tunnels for additional earliness
- Plant material – crowns, modules and direct seeding
- Plant density 40-80.000 plants per hectare
- Irrigation fully required
- Very high yield potential



Forced Production

- Very specialist operation
- Common in Japan
- Production environment – glasshouse or tunnels
- Harvest season can be manipulated as required
- Plant material – 2 year old crowns
- Plant density 100-200.000 crowns per hectare
- Very high yield potential
- Irrigation fully required



Plant Material

3 main types for establishment:

| Plant Type | Advantages | Disadvantages |
|-------------------|--|--|
| 1 year old crowns | Earlier first harvest Low risk Suitable for all soil types | More expensive Roots disturbed at the point of harvest |
| Modules / plugs | Lower cost than crowns Minimal root disturbance | More risks with weed control Longer time to first harvest |
| Seeds | Least costly plant type Fast to drill seeds at varying densities No root disturbance | Highest risk of establishment failure Longest time to first harvest |

Varieties

- There is a wide range of asparagus hybrids available across the world
- Breeding programs have specific focus, such as climate and colour of asparagus
- It is vital to select the right variety for your production location and market type
- Along with soil type and management, variety choice has the largest potential impact on the future profitability of your asparagus plantation



Guelph Millennium

- The standard variety in a range of territories
- Industry leading field longevity. Fields can remain commercially viable for up to 15-20 years
- High yields and very tight heads
- Recommended plant population is higher than others grown as standard in Europe



Guelph Eclipse

- Integral part of the new generation of green asparagus hybrids currently available
- Latest commercial variety from the breeding program
- Offers improved yield and tip quality over Guelph Millennium
- Increased spear diameter reduces harvesting costs
- Fast becoming the first choice variety in Michigan
- Limited volumes of seed available for spring 2019



Guelph Equinox

- The next in line of the new generation of green asparagus hybrids
- Commercial trials are now providing significant data to back up initial test plots
- Exceptional combination of high spear numbers and head quality
- The best spear uniformity we have ever seen
- First seed available in commercial volumes in 2020



Mondeo

- Bred in the north of Germany
- Early season production
- Precocious hybrid that get to full production more quickly than other varieties
- High production
- Good spear and tip quality
- Limited crown volumes for spring 2019



Early California and Patron

- Bred in Southern California, USA
- Suitable for production in hot and dry climates
- Require no winter chilling to start growth in the spring
- Very early season production. Early California first, followed by Patron
- High yields of excellent quality asparagus spears
- Opportunities in the south of Portugal
- Seeds available spring 2019 and crowns in 2020



Pacific Green

- New variety, bred by Aspara Pacific in New Zealand
- At its best in temperate / warm Continental climates
- Early / mid season production
- Very high yields
- Exceptional spear quality
- Limited crown volumes available spring 2019



Vittorio

- New asparagus hybrid, bred in the north of Italy
- Uniquely adaptable to both green and white asparagus spear production
- Large spear diameter
- Very closed tips
- Excellent yields
- Tolerant of heavier soils
- Limited seed volumes available in spring 2019 and crowns in 2020



Greenic

- Bred in the temperate climate of New Jersey, USA
- Exceptionally high production
- Very closed spear heads in warm growing conditions
- Uniform spear diameter and straightness
- Early season production
- Prefers light, well-drained soils
- Seeds available spring 2019 and crowns in 2020

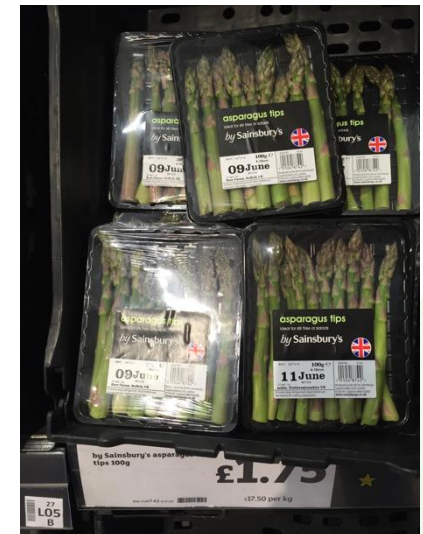


Asparagus production in this region

- Great opportunity to develop asparagus production in this part of Portugal
- Key essentials:
 - Know your market and strategy **before** planting
 - Choose the right soil
 - Plant the correct variety / varieties
 - Manage the plantation with care, especially in the early years

The Future

- Overall further expansion of green asparagus as a percentage of total world production. Market segmentation with more convenient packs offered to consumers
- Development of mechanical harvesting, especially in more expensive labour countries to reduce costs
- Advancement in new varieties to extend the harvest season and to combine with mechanical harvesting



Stay up to Date

- Last year, we launched a new website and this is where you can keep in touch with the latest developments in asparagus varieties

www.asparagusseeds.com

Thank you!

Obrigado!