

## **Pulses: Good for health, food security & climate**

The United Nations has proclaimed 2016 the 'International Year of Pulses'. For Bühler, the world's leading provider of rice and pulse processing solutions, pulses are a fast growing business originally taking off in 2010, with the introduction of the first pulse huller. Since its beginnings, the pulse processing business within Bühler's Pulses, Spices & Sesame division, has generated a business volume in excess of CHF 200 million. This year it is expecting to drive growth again from a regional to a worldwide platform, where significant growth opportunities are envisaged.

The aim of the 'International Year of Pulses' is to raise awareness of the particular benefits pulses provide for health, food security, and the world climate. The Food and Agriculture Organization of the United Nations (FAO) is collaborating with governments and relevant organisations and stakeholders to heighten public awareness of these benefits, plus underline that pulses can form the backbone of sustainable food production. The Year also creates a unique opportunity to encourage collaboration throughout the food chain to better utilise pulse-based proteins, encourage further global production of pulses, better utilise crop rotations and address the challenges in the trade of pulses.

### **Excellent meat substitutes**

Peas, lentils, chickpeas, and many other dry beans are high in protein, vitamins and minerals – making them an excellent meat substitute. When it comes to providing a growing world population with plant protein, pulses come top of the list. Their cultivation is more resource efficient than most animal protein sources, so they have a positive impact on environment sustainability. Pulses also contribute to a more sustainable cropping system, thanks to their ability to biologically fix nitrogen in the soil. On a worldwide scale, some 72 million tonnes of different pulses varieties are produced. There are many people in the developing countries who owe at least 10 percent of their daily energy intake to pulses.

Bühler [see the outside back cover] has pulses experts in locations ranging from North America to the Middle East, Africa and Europe. However, when it comes to pulses production and consumption, India is high on the league table – growing and processing more than 17 million tonnes a year, nearly a quarter of the global harvest and the chief reason for making India its 'Pulses-Headquarters'. This centre of competence for pulses, spices and sesame seed processing in Bangalore and Pune includes an application centre, 11 service stations, five sales offices, a research centre, two production and engineering sites as well as a training academy.

### **From India to the world**

Pulse processing in India only became mechanised in 2000 with the introduction of the first classifying, cleaning, and sorting devices. But it wasn't until 2010, that Bühler brought its first pulse huller PULSROLL™ – AIHI to market. With the introduction of this machine, Bühler helped change the face of the pulse processing industry - encouraging both conventional processors and new entrepreneurs to invest in pulses in a profitable and sustainable manner.

Take Bühler customer Shivam Protein as an example. As a producer of hulled and split pigeon peas for the Indian market, they approached Bühler to install a state-of-the-art automated plant, so that they could produce premium quality pulses for the expanding market. Yield went up by 2% when compared to their traditional mill, while labour and power costs per tonne of output reduced significantly. "The Bühler plant has delivered results beyond our imagination. Not only is the operation dust free and hygienic, but also fully automated, which has helped to improve productivity while keeping the production costs low," says Mr. Ashok Jethwani, owner of Shivam Proteins.

And it's not only in developing countries that pulses are popular. Demand is also growing in industrialised nations. Pulse flour, made from ground pulses, is increasingly finding its way into a variety of foods such as pasta and tortillas. Meanwhile extruded snacks are also benefiting from novel pulse developments, which boost their health appeal to consumers. These food trends are set to expand further in 2016, particularly driven by the even greater pressure on pulse processors to provide added value pulse products to meet demand, created by the 'International Year of Pulses'. Pulses have a high nutritional content and are rich in proteins, carbohydrates, nutritional fibres, vitamins, and minerals, while at the same time do not contain allergens such as gluten - a major reason why they are recommended as part of a nutritionally balanced diet.

### **Bühler closes the gap**

"In the past, pulse processing, particularly in North America, was often restricted to cleaning and then exporting," explains Surojit Basu, Global Product Manager at Bühler. Also, the rice and grain technologies that have been commonly employed for pulse hulling have not met the quality and quantity requirements of modern, large scale EU and US pulse processors.

Bühler is now bridging these gaps between the value chain - helping processors around the globe to adopt complete hulling and grinding operations, so that they can access the desirable nutrients from the pulses and therefore extract greater value. To do this Bühler is introducing technology to suit different processing needs globally, including customised process, plant capacities and technology variants. One such example is Bühler's dedicated pulse hulling solution PULSROLL™ – DRHG, which removes the hull from pulses efficiently, hygienically and cost effectively. The industry's only CE and ATEX pulse huller now enables processors in the EU and US to operate in today's increasingly regulated and highly automated industry. Since its launch in October last year, the company has already had multiple orders from customers based in Europe, Asia, USA and Canada. Examples such as this underline how Bühler has created the next level of quality benchmark for pulses through process excellence and cutting-edge technology.

### **Ready for the next step**

Bühler has the technology for post-harvest processing of pulses, able to convert raw material into diverse product forms, to meet consumer preferences within different markets. It believes pulses could play an important role in pasta, noodles, baked goods, breakfast cereals, and protein-rich products production, plus as an environmentally sustainable alternative to meat.

Most multinational food producers are already working towards effective utilisation of pulses in their products. "Once it is clear which pulse-based food product is desired by the market, its realisation can be very rapid, since the processing technology is mature," says Prasad Jaripatke, Head of Pulses, Spices and Sesame Seeds.

Bühler has the capability to leverage the value of pulses and pulse by-products, using post-harvest stabilisation, cleaning, dehulling, sorting and further food processing. The automation and technical excellence helps reduce damage, plus efficiently separates impurities while recovering valuable product, such as lighter grains. It also means that by-products previously consigned to the waste - such as pulse hulls, can now be used in the production of conventional foods such as pasta or baked goods, to supplement dietary fibre.

Bühler continues to develop new pulse processing technologies to meet the growing demand from processors and consumers alike. Innovation focuses on delivering increased efficiency, productivity and yields, as well as hygienic processing for maximum food safety. By being at the forefront of the pulses industry, Bühler is doing its bit to support consumer health, food security, and the environment. The company's dedication to investing in research and development coupled with its 150 years' worth of engineering expertise, means it is well positioned to continue to deliver innovative solutions to increase yield and ensure a more profitable product. "From a global perspective, pulses are still under-exploited and the industry involved in the agro-food conversion of pulses plays a decisive role in increasing consumption, as part of a healthy, lifestyle-relevant diet," Jaripatke closes.

### **Timeline Product/Service History**

How Bühler helped to change the face of the pulse processing industry

- Prior to 2000 Pulse processing is not mechanised
- Grain Cleaner Classifier launched into the pulse industry
- Cleaning and sorting station developed. This comprised of: cleaner classifiers, destoners, gravity separators and optical sorters.
- Consultancy on process and technology for complete plants
- PULSROLL™ AIHI – World's first dedicated pulse huller
- Pargem® – Partial germination process to improve nutritional profile of pulses
- Eco Dryer Pulses – LEEA – World's first dedicated drying solution for Pulses
- 15 TPD Economical Pulse processing plant – Breakthrough concept of compact and economical pulse processing plant – Designed especially for industry new-comers and small to medium scale processors
- SORTEX A & SORTEX B optical sorting range – For the removal of colour defects, damaged product and foreign material to meet industry quality and safety standards
- OilPlus series – An efficient and cost effective way of adding oil to pulses for hulling and polishing
- Bühler W optical sorter – Cost effective, high capacity optical sorting range
- PULSROLL™ DRHG - New generation CE and ATEX compliant pulse huller

- Hygienic polishing technology in development

### **About Bühler**

Every day, billions of people use Bühler technologies to satisfy their basic needs for food, mobility, or communication. With our industrial process technologies and solutions, we make a significant contribution to feeding the world's population while focusing on food safety and security. Around 65% of the wheat harvested worldwide is processed into flour on Bühler mills. The company's contribution to the global production and processing of rice, pasta, chocolate, and breakfast cereals is equally substantial. Furthermore, Bühler is a leading solution provider of die casting, wet grinding, and surface coating technologies, with a focus on applications in the automotive, optics, electronics, printing, packaging, and glass technologies. The solutions provided to these industries are characterised by high energy efficiency and sustainable mobility. As a leading technology group, Bühler invests up to 5% of its turnover in research and development every year. Bühler is proud of its Swiss roots, with 10,600 employees at some 140 sites generating sales of CHF 2.3 billion. As a family-owned company, Bühler feels particularly committed to sustainability.