

INNOVATION IN SOYBEAN: GENETICS, CHEMICAL AND FOOD PROCESSING

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Soybean is an important crop in the Brazilian agribusiness, which represents 12.8 % of the total export complex. For 2015, it is estimated a production of 91 million tons of grains. Soybean production started in the 70's in Rio Grande do Sul State and now it is spread all over the country, with the Central Brazilian the main area of production. In Brazil, soybean is processed for oil and meal. Oil is highly consumed, while the majority of protein production is exported for animal feeding. Small amounts of the soybean production is directed for human food processing, although this has increased in the last 10 years. Several different soy products of good quality can be found in the market. This is a result of a program to promote consumption and to develop soybean cultivars more adapted to human consumption developed by Embrapa since 1985. Characteristics of good flavor, reduction of antinutritional factors, and other physical characters for special uses such as sprouts (small seeds), edamame (large seeds), and black soybeans were included in breeding program. It was released null lipooxygenases cultivars, BRS 213 and BS 257; small seed cultivar, BRS 216; large seed cultivar, BRS 267, which also present good flavor; and BRS 155 with reduced trypsin inhibitor. Several studies were carried out with these special cultivars. Flavor of different soybean cultivars was analyzed by electronic sensor systems, which was able to separate and distinguish the differences. The so called electronic tongue was also effective to evaluate flavor of the breeding lines. Isoflavones, which are related with health benefits, present differences among cultivars due to genetic, environmental conditions, and processing techniques. Chemical characteristics of soybean were also analyzed to define different utilizations. Developing special soybean cultivars for human consumption is important for the domestic and international markets, mainly at niche markets that need raw material with improved special characters. Soybean in Brazil is treated as a commodity. Special soybean cultivars should be stimulated as vegetable or garden product.

NEW TRENDS FOR USE AND BENEFIT OF RICE AND BEANS

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The rice and beans constitute the staple foods for most of the Brazilian population, with relevant contribution as source of energy and protein in the diet, besides other important nutrients, such as minerals and vitamins, some functional compounds and dietary fibers. Both play an important role at the international market, regarding some differences in their forms of consumption, consumer preferences and demands or quality standards. Due to post-harvest processes of grains, some byproducts are released, mainly small and broken grains and rice bran, which can be treated and applied as food ingredients or even be used