

EGU21-5790, updated on 12 Jun 2021

<https://doi.org/10.5194/egusphere-egu21-5790>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Current soybean feed consumption in Luxembourg and reduction capability

Stéphanie Zimmer, Sabine Keßler, Laura Leimbrock-Rosch, and Marita Hoffmann

Institute for Organic Agriculture Luxembourg (IBLA), L-5365 Altrier, Luxembourg

Soybeans (*Glycine max* (L) Merr.) are an important protein source in animal feed. In Luxembourg, 100% of soybeans are imported and soybean feed consumption is unknown. This study aims to calculate the Luxembourgish soybean needs for 2018 for its predominant livestock (cattle, poultry, pigs) in conventional and organic agriculture, respectively, and to assess the reduction potential of soybeans.

Luxembourg has an agricultural area of 131,844 ha of which 51.4% is grassland and 47.3% is arable land. In 2018, 5.4% of the farms and 4.4% of the agricultural area were managed organically. Livestock data in 2018 indicates that 196,093 suckler and dairy cows are being raised in Luxembourg, whereof 4,050 are organic. Pigs add up to 91,745 (organic: 892) and poultry to 123,502 animals (organic: 31,318).

Soybean feed consumption was calculated per animal and year using two different approaches: SoyaMax is based on common feeding rations and SoyaMin represents a minimized soybean use in feeding rations. SoyaMin equals the potential for soybean reduction in Luxembourg. Based on the crude protein need of monogastric animals and ruminants, the consumption of soybean extraction meal is calculated for each animal category.

For rearing piglets, a SoyaMax of 46.2 kg is calculated and for fattening pigs SoyaMax is 99.4 kg (SoyaMin: 55.3 kg). For sows SoyaMax is 134.0 kg (SoyaMin: 68.5 kg). In organic pig production SoyaMax equals SoyaMin for all pig categories and is 56.0 kg.

For laying hens SoyaMax results in 10.2 kg (SoyaMin: 5.6 kg), whereas in organic agriculture SoyaMax is 9.3 kg (SoyaMin: 5.6 kg). Broilers are fed with a SoyaMax of 12.5 kg which also equals SoyaMin. In organic broiler production SoyaMax equals SoyaMin and is 6.9 kg.

SoyaMax for milk cows is based on different feed rations with various proportions of grass and maize silage, resulting soya extraction meal (SEM) for energy compensation and a protein surplus of 1.5 kg. SoyaMax in conventional agriculture is 287.0 kg (SoyaMin: 207.0 kg). In organic dairy production feeding in winter contains soybean, whereas feeding in summer is soybean-free. SoyaMax in organic production is 90.0 kg (SoyaMin: 66.0 kg). Both, conventional and organic suckler cows are not fed with soybean. For cattle less than one year SoyaMax is 49.0 kg (SoyaMin: 0 kg) and for male beef cattle between one and two years, SoyaMax is 219.0 kg (SoyaMin 33.0 kg).

No soybean is fed to organic cattle under two years old, and the same is true for conventional and organic heifers and breeding bulls.

In 2018, the calculated national consumption was 27,453 t of SEM. Feeding rations of ruminants accounted for 69%, and organic agriculture accounted for 1.3% of total SEM. Based on SoyaMin, the consumption could be reduced to 15,886 t. Luxembourg has a high potential of using grassland for feeding of dairy cows. Regarding high self-sufficiency with farm-grown fodder, SoyaMin and the lower livestock density in organic compared to conventional agriculture, organic agriculture could act as a role model to lower soybean needs and reach a higher protein-autarky in Luxembourg.