Today pig farming is the main source of animal protein for human nutrition, and occupies a strategic position in the global food marked. (Mohedano et al. 2012) Also in Brazil swine production is an important activity, and with a pig heard consisting of approximately 35 million pigs it is the fourth largest producer in the world. (Kunz et al. 2009) Most of this production is concentrated in the Southern regions, but in later years a rapid growth has taken place in the Central-West region as well. (Kunz et al. 2009)

The production change from subsistence to an industrial model has lowered the production costs, but it now possesses a higher environmental threat. When the effluents is not correctly handled serious pollution events can occur, and it is very important to find a cheap and sustainable solution that the farmers can afford to implement. The way this normally works is that all the liquid manure from the pigs is put into a biodigester where the manure is broken down into different products. After this process the liquid manure is separated into a methane and carbon dioxide rich gas, as well as solid manure that can be used as fertilizer and a liquid effluent. This effluent is high on ammonium and nitrates, and in Brazil it is common to store the effluent in reception pits or covered lagoons. (Kunz 2009)

The idea of growing duckweed in swine wastewater is relatively new, and not implemented on a large scale yet. However as discussed earlier the duckweed has exceptional features making it possible for the pig farms to implement the system without too big of an economical commitment. The rapid growth of duckweed makes it possible to harvest it twice a week (Xu & Shen 2010), and provides the farmer with valuable plant biomass. As a result the payback time for the extra equipment is considered to be low.

The studies of Xu & Shen, shows that duckweed should be grown on 50% swine lagoon effluent for efficient nutrient removal and healthy duckweed growth. (Xu & Shen 2010). This will result in clean water which can be mixed with new swine effluent, resulting in a closed loop water system.

It is possible to use high protein duckweed strings like *Lemna gibba 8578,* or *Lemna minor 8627* for the process. High protein duckweed has protein contents ranging from 15 all the way up to 45%, making it a high quality source for animal feed. (Xu & Shen 2010). By feeding this back to the pigs, the result is a low cost sustainable closed loop system. Should the farmer have access to cheaper protein sources or have an abundance of biomass, the duckweed can serve as an excellent protein meal replacement for soybean meal. By replacing the soybean meal with duckweed meal and shipping it out to the European animal feed marked, it can contribute to reduced deforestation of the Amazon and Central-West regions.