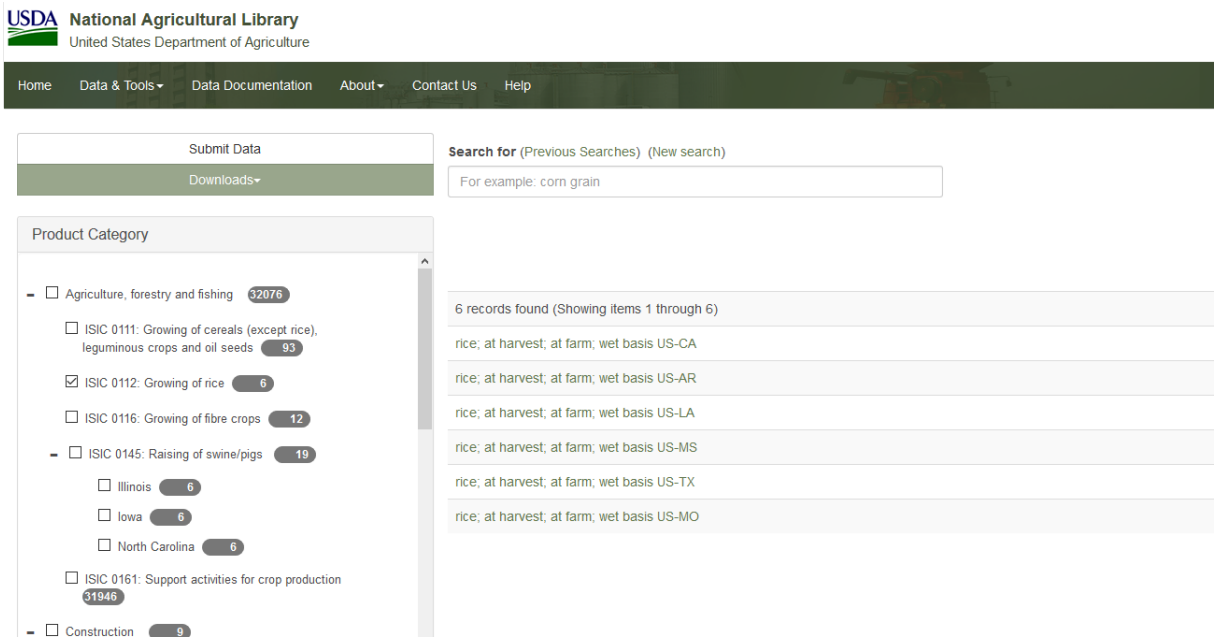
Exercise 3 – National dataset development by adjustment

With the information obtained in the training, how would you create datasets that are representative for Sri Lanka for one of the following options, Rice production and milling, Tea production and processing or Dairy production?

For a good overview of existing datasets, you can consult https://nexus.openlca.org.

Below you can find examples of sources for **Rice datasets.**

https://www.lcacommons.gov/discovery/search?loc=&max=50&year=&dtype=&hfacet=%22Agriculture%2C+forestry+and+fishing%7EISIC+0112%3A+Growing+of+rice%22&SYNCHRONIZER_URI=%2Fdiscovery%2Fsearch&qlookup=&hfacetCat=&equip=&provider=&id=&crop=&SYNCHRONIZER_TOKEN=6d509f8d-d1d5-4f62-93e6-c141e6984ed0



Source: http://irri.org/our-work/locations/sri-lanka

Sri Lanka and IRRI started collaborating in 1960 through training and exchange of rice varieties. In 1967, an agreement between Sri Lanka and the Ford Foundation led to a two-year program between IRRI and the country's Department of Agriculture where its scientists eventually trained at IRRI. Renewed in 1969, the program also included technology transfer activities.

Different projects were conducted with the collaborative efforts of IRRI and partner institutions in Sri Lanka, one of which is a collaboration with the country's Department of Agriculture (DOASL) and the United States Agency for International Aid (USAID). They undertook a Rice Research project where Sri Lankans were provided with nearly 25 graduate scholarships to different universities in the US, UK, and the Philippines, as well as 100 short-term trainings in rice production, and cropping systems. Moreover, the project also provided research equipment and infrastructure development in rice research stations, and included as a component the improvement of rice varieties.

In 2007, DOASL and IRRI held a collaborative workplan meeting where they identified some areas for mutual cooperation. This included improving existing rice varieties in terms of quality and yield, enhancing conservation of rice genetic resources, increasing labor productivity, and strengthening the delivery and impact of technology through good extension models. Similar with past agreements, DOASL continued to serve as the clearing house for IRRI's activities in Sri Lanka. Both institutions continue to find ways and means of improving collaboration including funding support.

RICE RESEARCH
AND
DEVELOPMENT INSTITUTE
Department of Agriculture - Sri Lanka

1.1.1 RICE CULTIVATION

RICE

Rice is the single most important crop occupying 34 percent (0.77 /million ha) of the total cultivated area in Sri Lanka. On average 560,000 ha are cultivated during maha and 310,000 ha during yala making the average annual extent sown with rice to about 870,000 ha. About 1.8 million farm families are engaged in paddy cultivation island-wide. Sri Lanka currently produces 2.7 million t of rough rice annually and satisfies around 95 percent of the domestic requirement. Rice provides 45% total calorie and 40% total protein requirement of an average Sri Lankan. The per capita consumption of rice fluctuates around 100 kg per year depending on the price of rice, bread and wheat flour.

The current cost of production of rough rice is Rs. 8.57 per kg. The cost of labor, farm power and tradable inputs constitutes 55%, 23% and 23% respectively.

Field water requirement for a rice crop depends mainly on the growth duration of the crop and its growing environment. It is calculated that about 30-40% of the total water supplied to an irrigated crop is often supplied before the establishment of the rice crop and the amount is dependent on the soil drainage class, weed density and time taken for land preparation. Time taken for land preparation could be minimised to about 2 weeks using total killing herbicides (e.g. Paraquat) which also would help to reduce one tillage operation and conserve irrigation water.

Recommended Herbicides for Rice Weeds
One shot herbicides

Trade Name	Common Name	Rate of application/ha
Sofit	Pretilachlor 300 g/lit.EC	1.6 lit.
Goal	Oxyflorfen 240 g/lit.EC	0.5 lit.

Broad leaves/Sedge Herbicide

Trade Name	Common name	Rate of application/ha
Hedonal	2.4 D 550 g/lit.SL	0.95 - 1.2 lit.
	MCPA 600 g/lit.SL/EC	0.8 - 1.1lit.

Source: http://www.doa.gov.lk/rrdi/index.php/en/rice

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New Rathna Rice (PVT) Ltd.
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Pulasthigama, Polonnaruwa,
Sri Lanka.
Tel - 027-2242627
Email - newrathna.rice@gmail.com

The Rice Grain

The rice grain has both physical and chemical characteristics.

Physical Structure

A rice grain is made up of an outside husk layer, a bran layer, and the endosperm, see Figure 1. The husk layer (lemma and palea) accounts for 20% of the weight of paddy and helps protect the grain kernel from insect and fungal attack. When the husk is removed, the rice is called brown rice. Brown rice contains the bran layer and the endosperm. The bran layer is made up of the pericarp and testa, the aluerone layer and the embryo. The degree to which this bran layer is removed is known as the milling degree. The desired amount of bran removed depends on the country. In Japan, the aluerone layer is often not removed however in many other countries all bran layers are removed to give very highly polished rice. The storage life of milled rice is improved when all of the bran layers are removed.

Physical characteristic	Percentage
Paddy	100
Husk	20
Brown rice	80
Meal Pericarp and testa (5-6%) Aluerone (1%) Embryo (3%)	8-10
White rice	70-72

Chemical Composition of Milled Rice

Rice at 12% moisture contains approximately 80% starch and 7% protein. (Currey, 1984 Starch occurs in the endosperm as small many-sided granules while protein is present a particles that lie between the starch granules. Rice grain also contains sugars, fat, dietar fiber and minerals.

Component	Brown rice	White rice	Bran
Water (%)	13-14	13-14	13-14
Starch (%)	68-70	80	9
Amylose	28-30	33	6
Protein (%)	6-8	6-7	14
Fat	3	1	20
Fiber	2-3	0.5	25
Crude ash	1-1.5	0.5	9-10

Source: http://www.newrathnarice.com/

Araliya Rice Mill
3,2 ★★★☆☆ (4) · Industriegebiet
Polonnaruwa, Sri Lanka
+94 27 2 227227
Jetzt geschlossen
WEBSITE ROUTE

Chinthaka Rice Mill
5,0 ★★★★★ (3) · Lebensmittelanbieter
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+94 71 446 2349
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ROUTE

Fazi Hajiyar Rice mill
Keine Rezensionen · Reismühle
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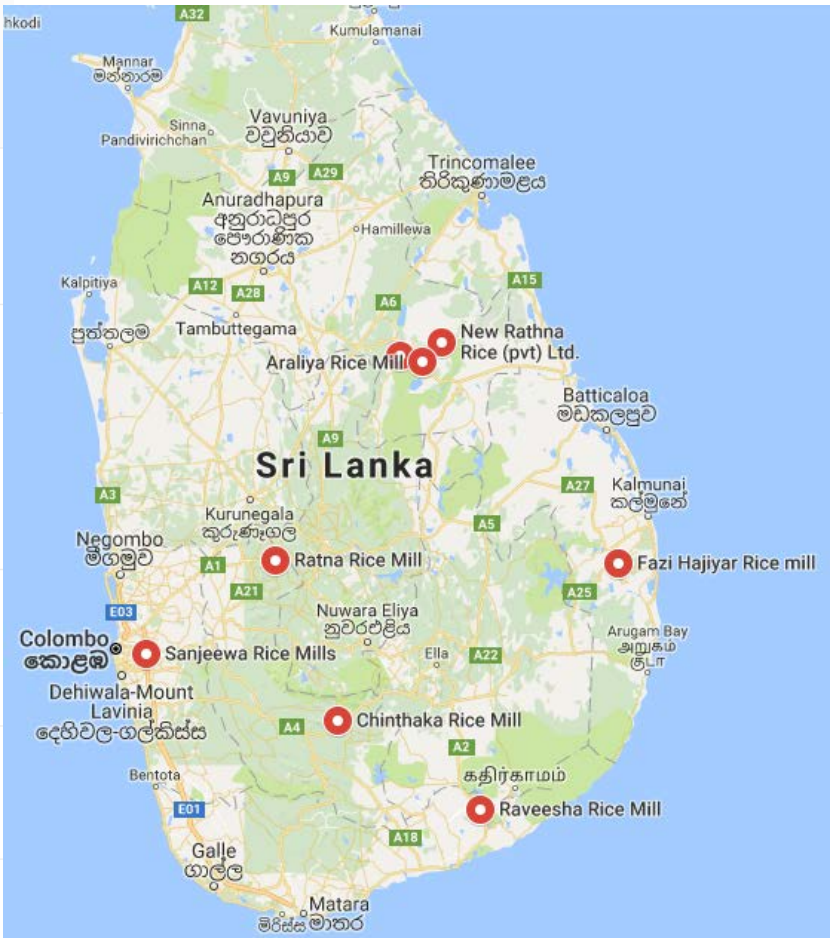

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Agricultural Water Management

Predicting the impacts of climate change—A case study of paddy irrigation water requirements in Sri Lanka

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ABSTRACT

Nearly 72% of paddy production, the staple food in Sri Lanka, is grown during the wet season in dry areas where water resources are already stressed. Climate change datasets for Sri Lanka were derived using outputs from the UK Hadley Centre for Climate Prediction and Research Model (HadCM3) for selected scenarios for the 2050s, chosen from the Intergovernmental Panel of Climate Change Special Emission Scenarios Report. Water balance modelling and a geographical information system were used to model and map the impacts on irrigation requirements for wet season paddy. We examined two scenarios. The A2 scenario represents a heterogeneous, regionalised, market-led world, with high population growth, leading to a rapid increase in atmospheric carbon dioxide levels. The B2 scenario follows a similar regionalised future but with more moderate population growth and more concern for the environment and local sustainability, and a slower rate of increase in atmospheric carbon dioxide.

Results suggests that, during the wet season, average rainfall decreases by 17% (A2) and 9% (B2), with rains ending earlier, and potential evapotranspiration increasing by 3.5% (A2) and 3% (B2). Consequently, the average paddy irrigation water requirement increases by 23% (A2) and 13% (B2).

Mapping with GIS highlights the importance of considering spatial variation. Climate change impacts on wet season paddy production are positive in the extreme south, confirming results of a previous study. However, the impacts are negative across most of Sri Lanka. The adaptations needed are different in the two regions. Furthermore, spatial variation points to a further adaptation; the transfer of some paddy production to positively affected areas, which would not have been so clear if only point modelling had been used.

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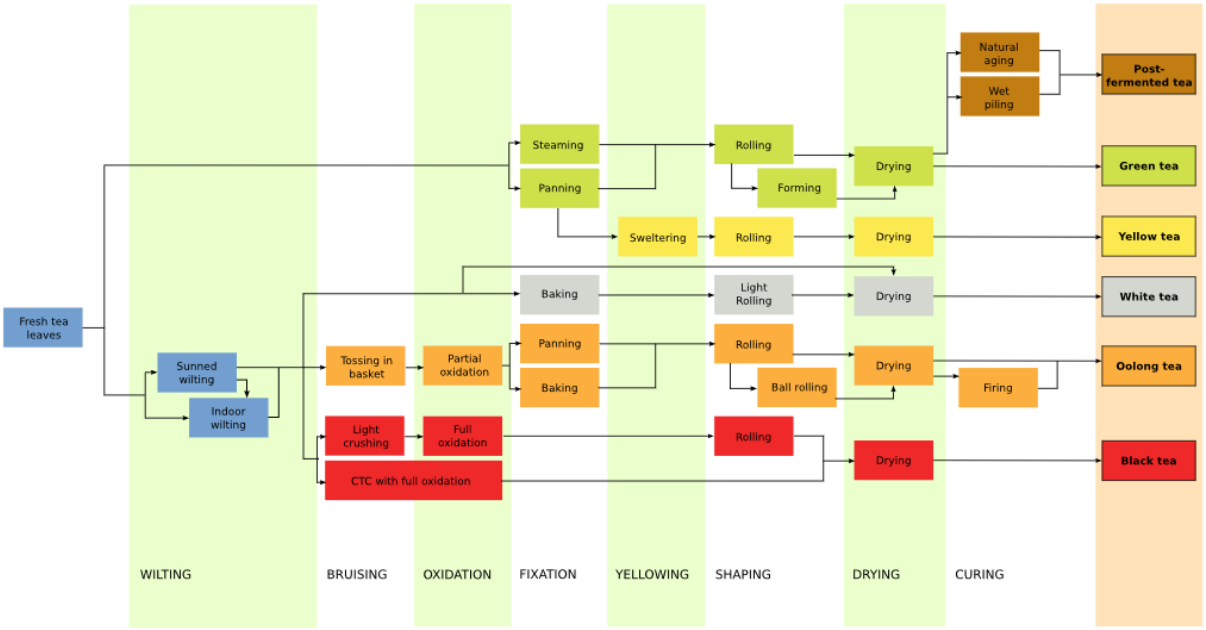
Data for Tea production and processing



https://upload.wikimedia.org/wikipedia/commons/1/13/Teaprocessing.svg

https://en.wikipedia.org/wiki/Tea_processing

http://www.fao.org/fileadmin/templates/est/Climate_change/kenya/Navaisha_wkp_1/FAO_Uni_Manchester_AZAPAGIC_LCA_of_tea.pdf

Dairy production

http://sites.nationalacademies.org/cs/groups/pgasite/documents/webpage/pga_065995.pdf

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Dr. Ying Wang
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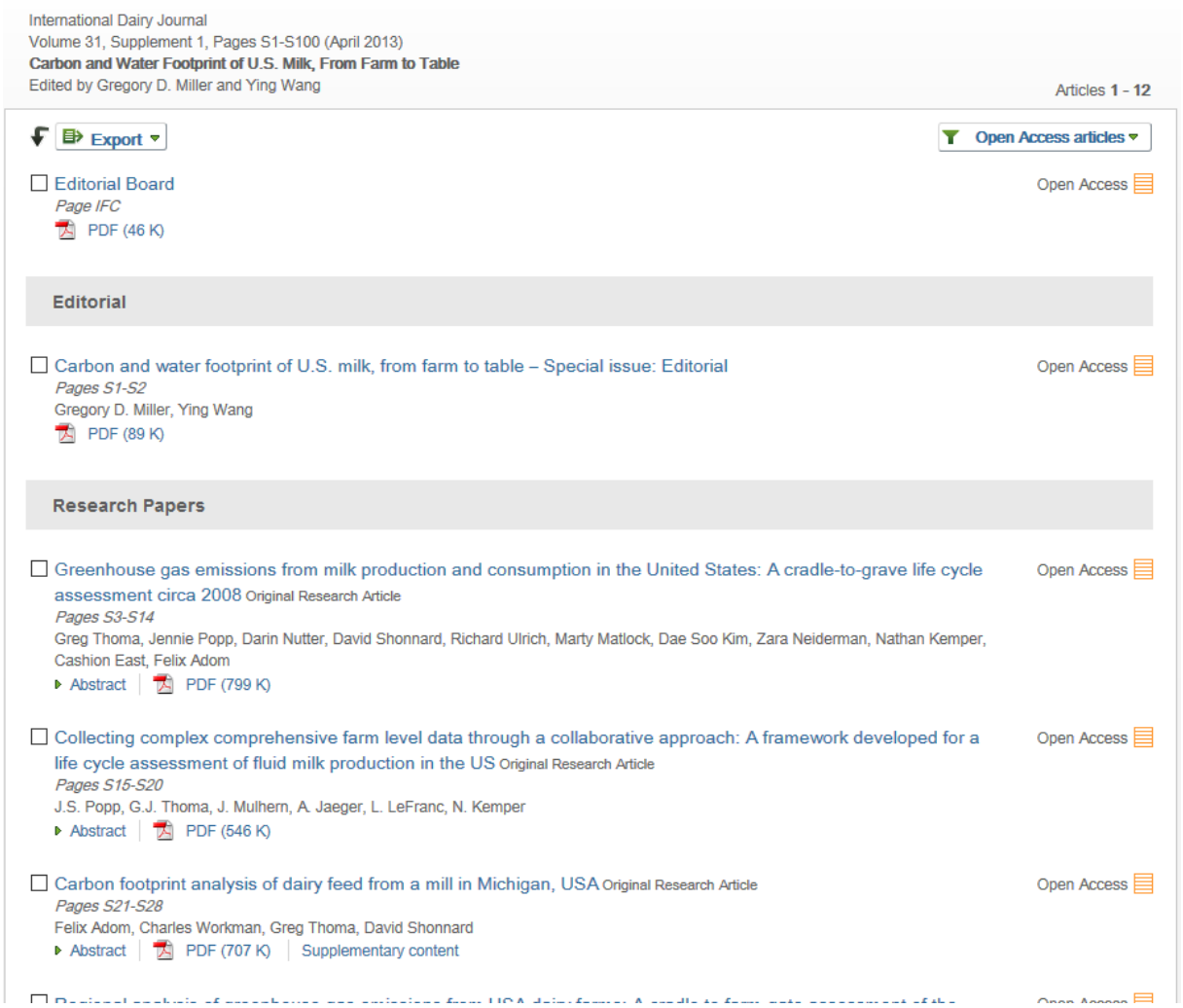

International Dairy Journal
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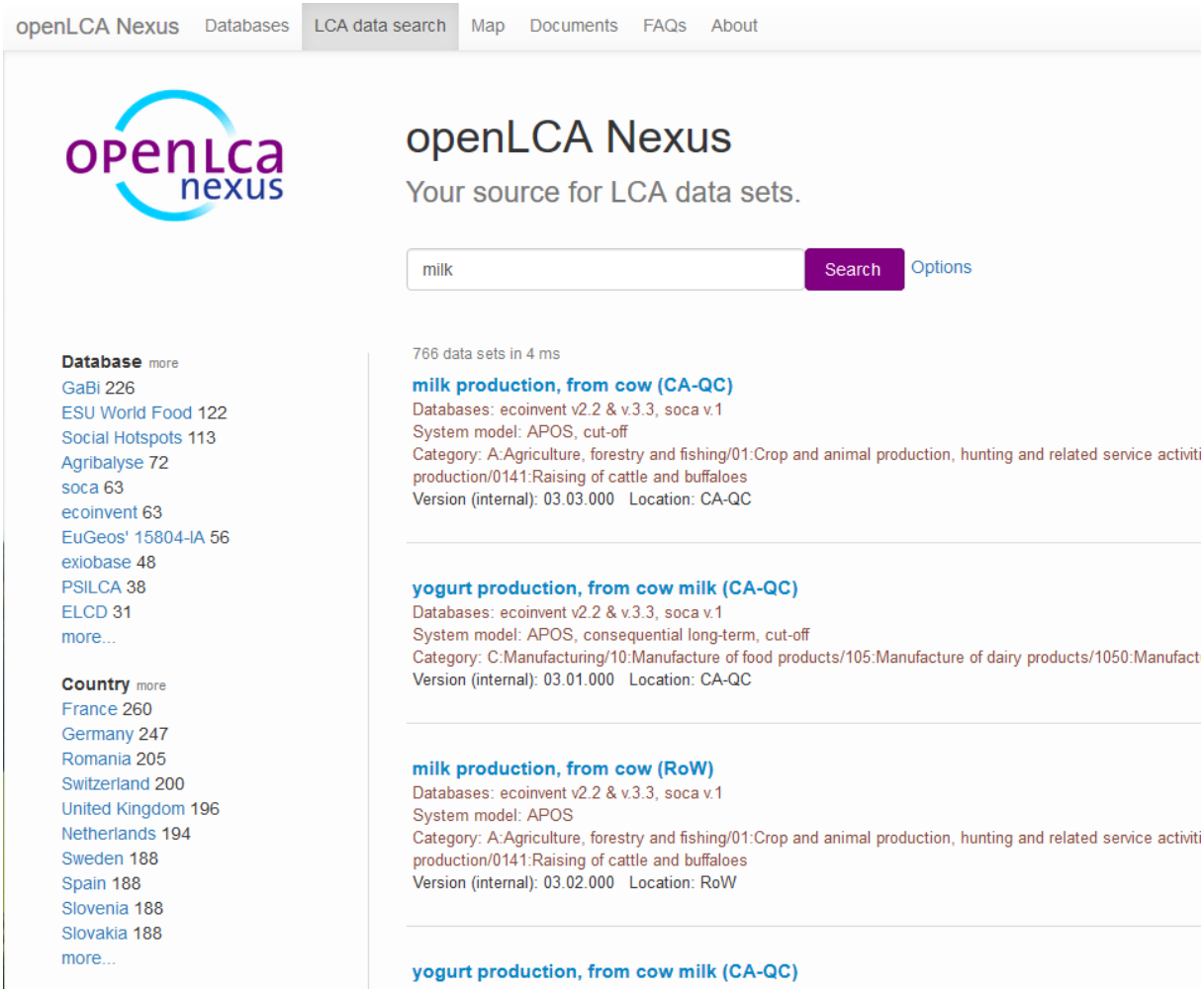

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Life Cycle Assessment modeling of milk production in Iran

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