# Food Balance Sheets

## Wheat

For this example, we'll first consider the commodity tree for wheat. We start off with an empty table:

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat flour | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bulgur | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Breakfast cereals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat starch | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat bran | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### Production

For production data, we first fill in the table with any available official figures. To impute production, we must also consider yield and area harvested data as yield is defined as production divided by area harvested (and thus with any two elements the third is uniquely defined). Suppose we have the following official data:

| Item | Area Harvested | Yield | Production |
|---|---|---|---|
| 0111 | 18496174 | 0 | 0 |
| 23110 | NA | NA | 18652048 |

In this case, the production value is only known for wheat flour (it is missing for wheat), and for wheat we are also missing the yield value. The first step in the imputation process is to impute the yield, using the previously described production imputation methodology.

| Item | Area Harvested | Yield | Production |
|---|---|---|---|
| 0111 | 18496174 | 3 | 0 |
| 23110 | NA | NA | 18652048 |

Now, we have enough information to impute the production data:

| Item | Area Harvested | Yield | Production |
|---|---|---|---|
| 0111 | 18496174 | 3 | 54418808 |
| 23110 | NA | NA | 18652048 |

Now, we fill in the table with our production values. Production is only imputed for primary products, and so in this case no additional values are filled in.

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bulgur | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Breakfast cereals | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat starch | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat bran | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Trade**

For the next example, we'll show how the imputation, mirroring and balancing works. In this case, we just take the country totals and insert into this table.

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

NOTE (Josh): The trade figures I quote here are based on the US data, but not exactly. We have HS6 trade data, and I can map that to CPC. However, some HS6 codes map to many CPC codes. My understanding is that the historical approach has been to not use split factors and to simply map the quantity straight into one of the CPC codes. For this simple example, I map the HS data to CPC and randomly split it.

**Stock Changes**

We now estimate the stock changes. Note that for most products, we assume that countries do not hold stocks. Generally, stocks will only be held for primary level products, and not even all of these products. The numbers below represent the estimated stock changes (by the stock imputation methodology described previously) for the example country we're considering.

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Food**

The allocation to food, on the other hand, can potentially be considered at any processing level, although some commodities (such as wheat) are assumed to not be eaten as such. We impute food consumption numbers for the example country and update the FBS table below.

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | 0 | 0 | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |

**Losses**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 560306 | 0 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | 0 | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | NA | 0 | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | NA | 0 | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | NA | 0 | 0 | 0 | 0 |

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | NA | 0 | 0 | 0 | 0 |

**Seed**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 560306 | 1929614 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | NA | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | NA | NA | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | NA | NA | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

**Industrial Utilization**

Work in progress...

**Tourist Consumption**

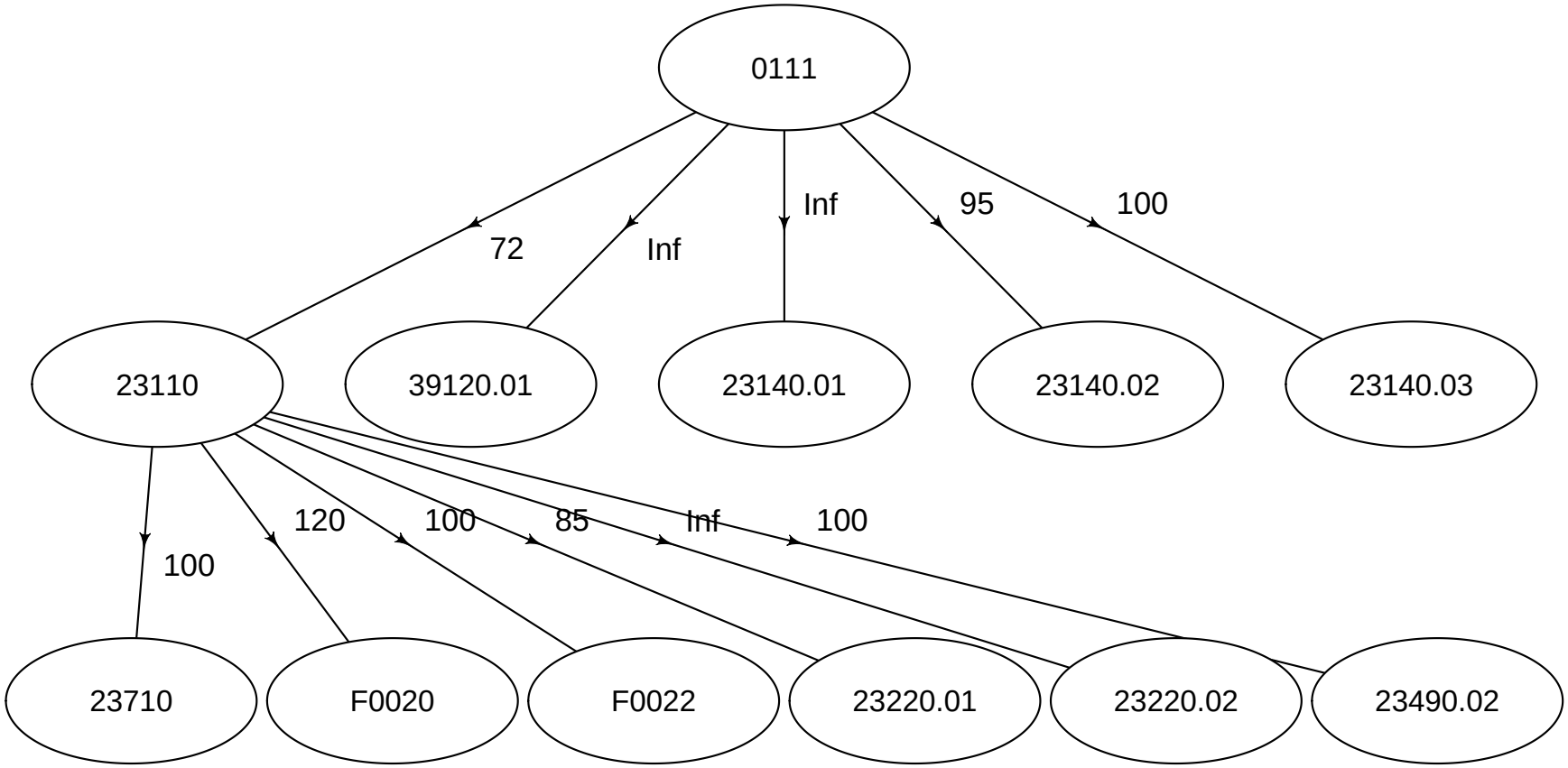
The tourist consumption estimation approach uses tourist data from the WTO as well as last year's consumption patterns to estimate the impact of tourism on local consumption. Note that tourist consumption can be negative; as an extreme example consider a case where many nationals travel abroad but no tourists enter. In this case, that country will certainly have a negative "tourist consumption" because more calories will be assumed abroad than locally.

**Residual Other Uses**

Work in progress...

**Standardization**

Now, suppose we have the following commodity tree:




NOTE (Josh): This commodity tree above is derived based on the FCL commodity tree. It will likely need to be updated, but for now I just simply map the FCL elements to their corresponding CPC codes.

NOTE (Josh): At this point, we should also compute calories/proteins/fats.

NOTE (Josh): Need to keep track of the standard deviations as well so that we can balance at the end.

**Standardization Approach 1** We first standardize all commodities up or down the commodity tree to the first processing level equivalent. We do this element-by-element, and thus we represent trade and food consumption of derived products in their first-processing level equivalent (which seems very natural/reasonable). However, we also do this for the primary product: we translate production of wheat into production of flour/bran/germ; stock changes of wheat into stock changes of flour/bran/germ; etc. For all elements except production, this standardization is additive (i.e. the imports of flour are added to the standardized imports of wheat, bread, etc. to get the total standardized imports of flour). For production, this should not

occur as you never truly have "production" of processed products. However, if production of a processed product is reported, that means that the standardized primary product must provide for this production and thus we update the shares to give us the correct amount here. Thus, our table is updated as follows:

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat flour | 18652048 | 1026712 | 11811531 | -79048 | 18539484 | 0 | 192045 | 661375 | 0 | 0 | 0 |
| Bulgur | 5417628 | 334734 | 3441100 | -22960 | 3684 | 0 | 55781 | 192101 | 0 | 0 | 0 |
| Breakfast cereals | 22810383 | 1145988 | 14199975 | -96672 | 98131 | 0 | 234860 | 808824 | 0 | 0 | 0 |
| Wheat bran | 0 | 258937 | 2343712 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Problem: Flour, in this case, receives a very low share because the production of wheat is so high and so much is exported. Thus, we shouldn't be standardizing production in this way but rather the food from wheat should flow into the production of flour and other derived products.**

**Standardization Approach 2** We first start with the pre-standardized table:

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 560306 | 1929614 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | NA | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | NA | NA | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | NA | NA | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

We first standardize the food values up to Wheat to get an estimate for food for the primary commodity:

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | 25851292 | 0 | 560306 | 1929614 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | NA | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | NA | NA | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | NA | NA | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

**Standardization Approach 3** We first start with the pre-standardized table:

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 560306 | 1929614 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | NA | 0 | 0 | 0 |
| Bulgur | NA | 135717 | 176724 | NA | 3684 | 0 | NA | NA | 0 | 0 | 0 |
| Breakfast cereals | NA | 308048 | 455645 | NA | 98131 | 0 | NA | NA | 0 | 0 | 0 |
| Wheat starch | NA | 624947 | 224528 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Wheat bran | NA | 258937 | 2343712 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

We then compute the needed "production" of each of the processed products to satisfy any deficits due to exports or consumption (note that we can allow production to be zero if supply exceeds utilization).

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Wheat | 54418808 | 1999076 | 32789894 | -230630 | NA | 0 | 560306 | 1929614 | 0 | 0 | 0 |
| Wheat flour | 18652048 | 341529 | 572794 | NA | 18539484 | 0 | NA | NA | 0 | 0 | 0 |
| Bulgur | 44691 | 135717 | 176724 | NA | 3684 | 0 | NA | NA | 0 | 0 | 0 |
| Breakfast cereals | 245728 | 308048 | 455645 | NA | 98131 | 0 | NA | NA | 0 | 0 | 0 |
| Wheat starch | 0 | 624947 | 224528 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Wheat bran | 2084775 | 258937 | 2343712 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

TO DO: Standardize all these "productions" up to the food of their parents and continue until you get a food value for wheat (note: above, you calculated production of flour too early). Then, you will have a distribution for food based on the sum of the distributions for all the children. In the case of by-products, the commodity with the highest production requirement should be used!!! Now, Food gets adjusted in the balance, and this adjustment proportionally flows down to all the children according to their variability. Additionally, we must enforce consistent shares/extraction rates across grouped commodities (for example, flour/bran/germ) and so when flowing back down we will create excess production of some of the by-products.

**Problem: How do we allocate the excess when processing back down? Should this excess be directly allocated to food/feed (depending on the commodity)? Or maybe we do a balance at the SUA level and allocate a little to trade as well, if trade is not official?**

### Feed

Feed allocation must be done at this phase in order to ensure that we have reduced the feed demand by the corresponding amounts of feed products (i.e. wheat bran, wheat germ, etc.).

**Balancing**

## Cattle Meat

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat of cattle | 11921102 | 63429 | 33424 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat of cattle boneless | 0 | 93126 | 179197 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bovine meat | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Extracts of meat | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Butcher fat | 0 | 19637 | 267121 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Production**

**Trade**

**Stock Changes**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat of cattle | 11921102 | 63429 | 33424 | -1431 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat of cattle boneless | 0 | 93126 | 179197 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bovine meat | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Extracts of meat | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Butcher fat | 0 | 19637 | 267121 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Food**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat of cattle | 11921102 | 63429 | 33424 | -1431 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Meat of cattle boneless | 0 | 93126 | 179197 | NA | 7793721 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bovine meat | 0 | NA | NA | NA | 98 | 0 | 0 | 0 | 0 | 0 | 0 |
| Extracts of meat | 0 | NA | NA | NA | 949 | 0 | 0 | 0 | 0 | 0 | 0 |
| Butcher fat | 0 | 19637 | 267121 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |

**Losses**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat of cattle | 11921102 | 63429 | 33424 | -1431 | NA | 0 | 22766 | 0 | 0 | 0 | 0 |
| Meat of cattle boneless | 0 | 93126 | 179197 | NA | 7793721 | 0 | NA | 0 | 0 | 0 | 0 |
| Bovine meat | 0 | NA | NA | NA | 98 | 0 | NA | 0 | 0 | 0 | 0 |
| Extracts of meat | 0 | NA | NA | NA | 949 | 0 | NA | 0 | 0 | 0 | 0 |
| Butcher fat | 0 | 19637 | 267121 | NA | NA | 0 | NA | 0 | 0 | 0 | 0 |

**Seed**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Meat of cattle | 11921102 | 63429 | 33424 | -1431 | NA | 0 | 22766 | NA | 0 | 0 | 0 |
| Meat of cattle boneless | 0 | 93126 | 179197 | NA | 7793721 | 0 | NA | NA | 0 | 0 | 0 |
| Bovine meat | 0 | NA | NA | NA | 98 | 0 | NA | NA | 0 | 0 | 0 |
| Extracts of meat | 0 | NA | NA | NA | 949 | 0 | NA | NA | 0 | 0 | 0 |
| Butcher fat | 0 | 19637 | 267121 | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

**Industrial Utilization**

Work in progress...

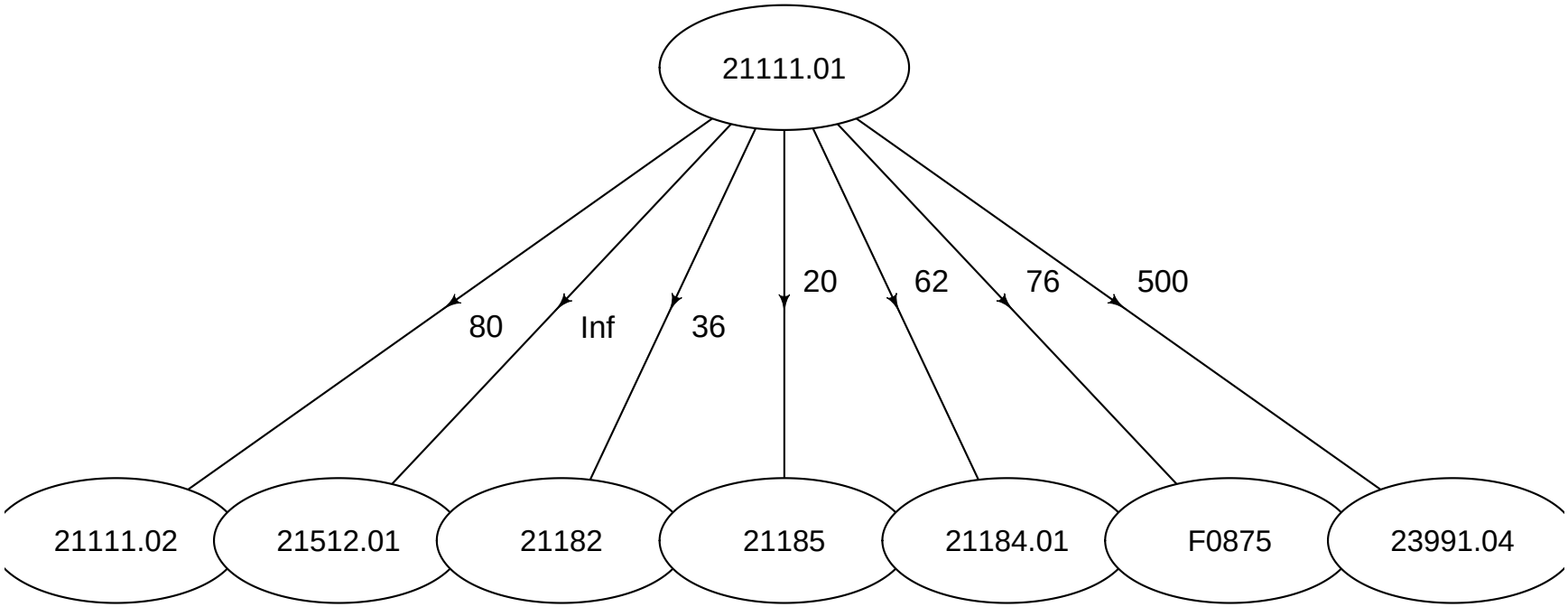
**Tourist Consumption**

Work in progress...

**Residual Other Uses**

Work in progress...

**Standardization**




**Feed**

**Balancing**

## Palm Oil

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Palm oil | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of Palm | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Margarine | 3714000 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fatty acids | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Animal or vegetable fats | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fat preparations n.e. | 194125 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydrogenated oils | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Production**

**Trade**

**Stock Changes**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Palm oil | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of Palm | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Margarine | 3714000 | NA | NA | 3866 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fatty acids | 0 | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Animal or vegetable fats | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fat preparations n.e. | 194125 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydrogenated oils | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Food**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Palm oil | 0 | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Oil of Palm | 0 | NA | NA | NA | 15000 | 0 | 0 | 0 | 0 | 0 | 0 |
| Margarine | 3714000 | NA | NA | 3866 | 3729905 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fatty acids | 0 | NA | NA | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Animal or vegetable fats | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |
| Fat preparations n.e. | 194125 | NA | NA | NA | 175439 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hydrogenated oils | 0 | NA | NA | NA | NA | 0 | 0 | 0 | 0 | 0 | 0 |

**Losses**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Palm oil | 0 | NA | NA | NA | 0 | 0 | NA | 0 | 0 | 0 | 0 |

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Oil of Palm | 0 | NA | NA | NA | 15000 | 0 | NA | 0 | 0 | 0 | 0 |
| Margarine | 3714000 | NA | NA | 3866 | 3729905 | 0 | NA | 0 | 0 | 0 | 0 |
| Fatty acids | 0 | NA | NA | 0 | NA | 0 | NA | 0 | 0 | 0 | 0 |
| Animal or vegetable fats | 0 | NA | NA | NA | NA | 0 | NA | 0 | 0 | 0 | 0 |
| Fat preparations n.e. | 194125 | NA | NA | NA | 175439 | 0 | NA | 0 | 0 | 0 | 0 |
| Hydrogenated oils | 0 | NA | NA | NA | NA | 0 | NA | 0 | 0 | 0 | 0 |

**Seed**

| Name | Production | Imports | Exports | StockChange | Food | Feed | Waste | Seed | Industrial | Tourist | Residual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Palm oil | 0 | NA | NA | NA | 0 | 0 | NA | NA | 0 | 0 | 0 |
| Oil of Palm | 0 | NA | NA | NA | 15000 | 0 | NA | NA | 0 | 0 | 0 |
| Margarine | 3714000 | NA | NA | 3866 | 3729905 | 0 | NA | NA | 0 | 0 | 0 |
| Fatty acids | 0 | NA | NA | 0 | NA | 0 | NA | NA | 0 | 0 | 0 |
| Animal or vegetable fats | 0 | NA | NA | NA | NA | 0 | NA | NA | 0 | 0 | 0 |
| Fat preparations n.e. | 194125 | NA | NA | NA | 175439 | 0 | NA | NA | 0 | 0 | 0 |
| Hydrogenated oils | 0 | NA | NA | NA | NA | 0 | NA | NA | 0 | 0 | 0 |

**Industrial Utilization**

Work in progress...

**Tourist Consumption**

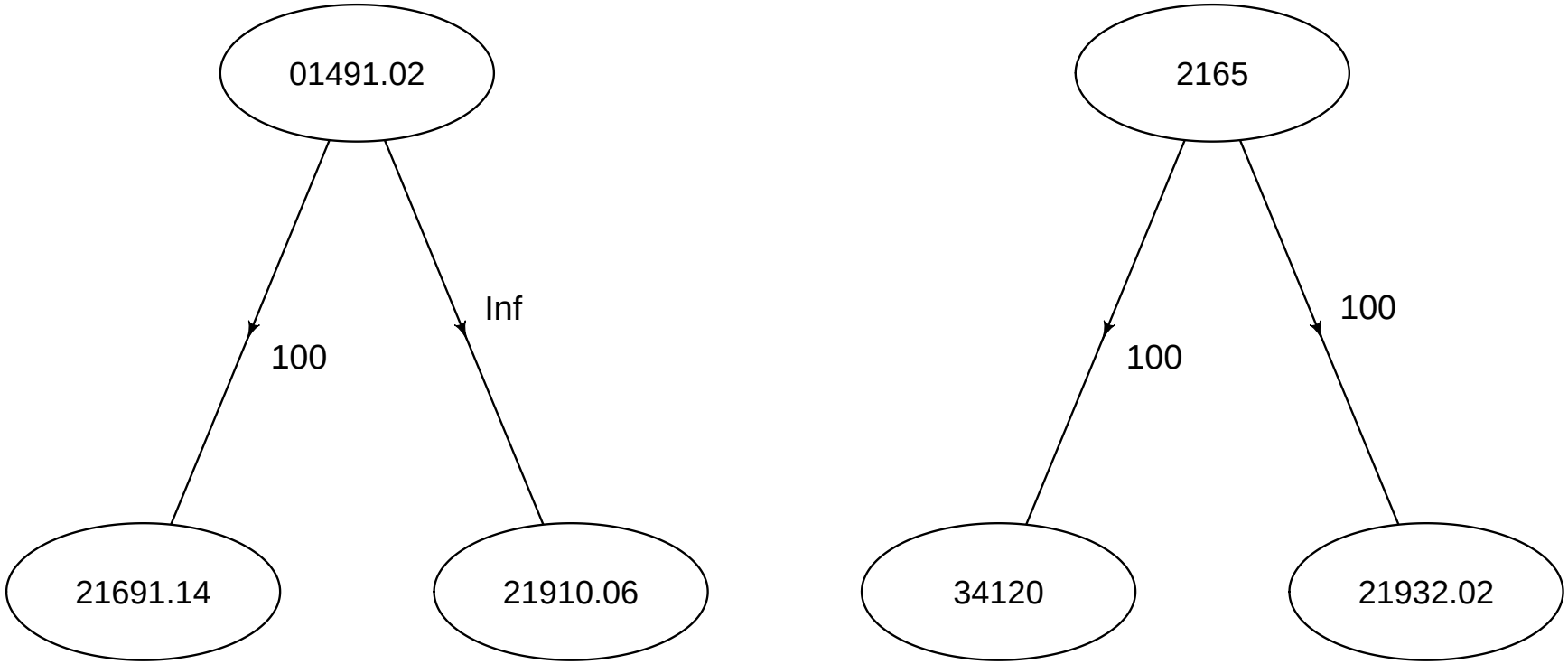
Work in progress...

**Residual Other Uses**

Work in progress...

**Standardization**

NOTE (Josh): This commodity tree looks like two separate trees. But, the two parent nodes can actually be processed into many of the same children. I'm not sure what the logic was for historically rolling up some of the children into one of the parents and some of the children into the other parent, but that would presumably need to be reviewed/revised.




**Feed**

**Balancing**