We seek to describe vineyards as a complex system, by agreeing upon the structure of a Bayesian Network. This involves including any further important variables, decisions and effects within vineyards as nodes. And linking these nodes together to describe whether they effect each other; which we call defining the causal relationships.

The attached document contains:

* A summary table of nodes, their connections and data sources.
* Graphical outline of the graph structure

Due to the complexity of the current graph structure I have also included smaller graphical representations of the nodes with greater than 4 connections, for:

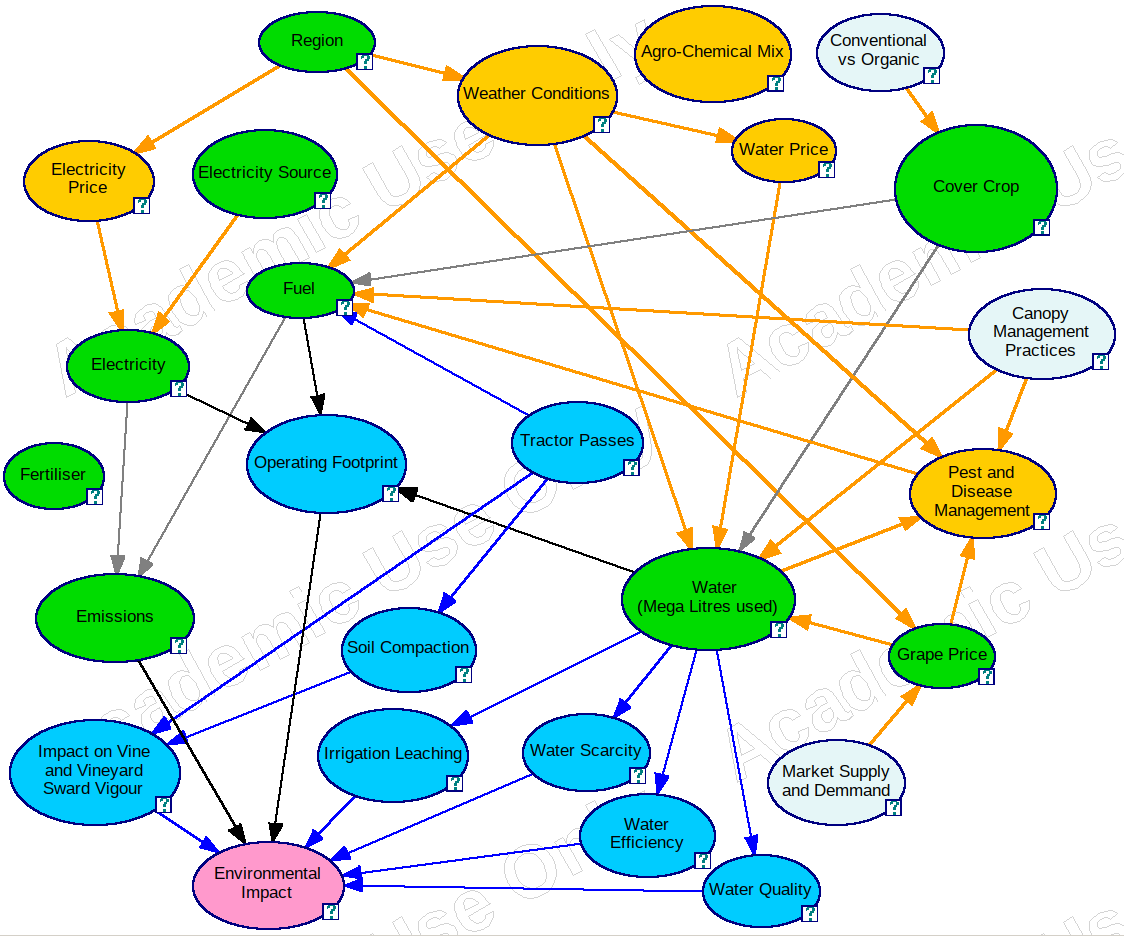
* Water (Mega litres used)
* Pest and disease management
* Fuel
* Environmental Impact

These materials can be edited and returned to help construct further networks, and approach an agreeable system that usefully describe vineyards, their operations and influencing factors.

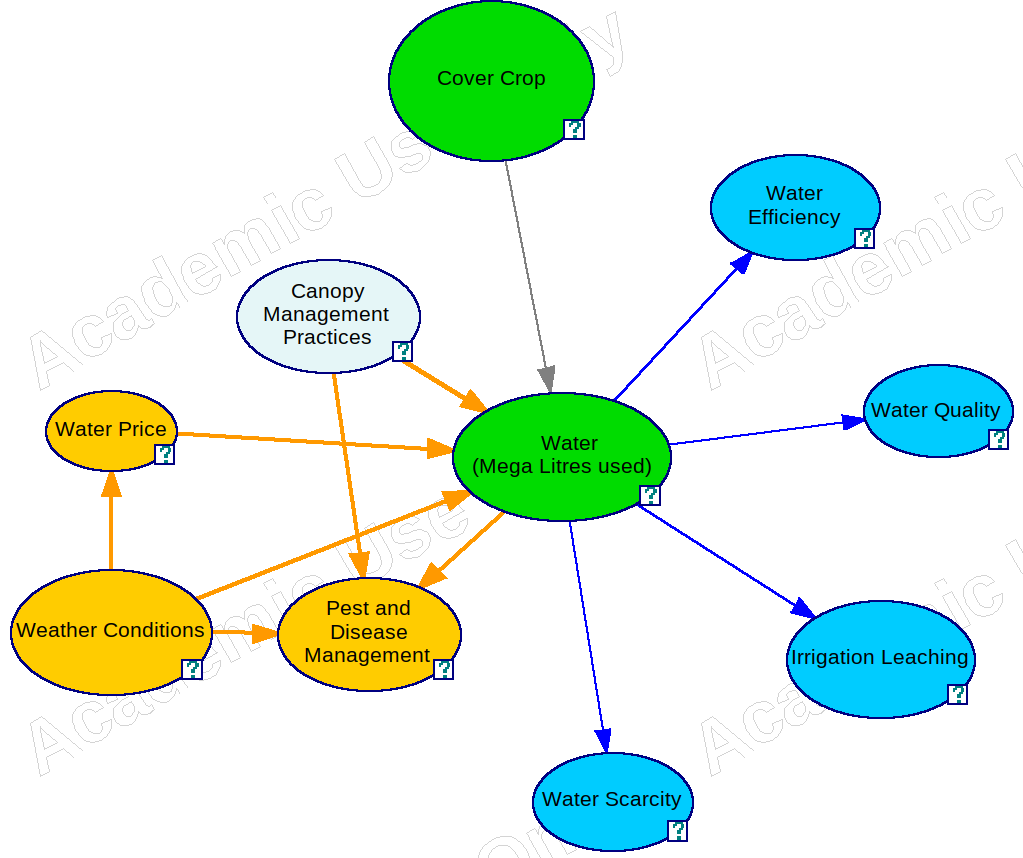
Table of nodes, connections and data sources

|  |  |  |
| --- | --- | --- |
| **Node** | **Connected to (impacts on)** | **Data Source** |
| Environmental Impact |  | Expert defined |
| Fertiliser |  | SWA |
| Agro-Chemical Mix |  | Spray Diaries |
| Water Quality | Environmental Impact |  |
| Water Efficiency | Environmental Impact |  |
| Irrigation Leaching | Environmental Impact |  |
| Water Scarcity | Environmental Impact |  |
| Impact on Sward Vigour | Environmental Impact |  |
| Soil Compaction | Impact on Sward Vigour |  |
| Operating Footprint | Environmental Impact |  |
| Emissions | Environmental Impact |  |
| Fuel | Emissions  Operating Footprint | SWA |
| Tractor Passes | Soil Compaction  Impact on Sward Vigour  Fuel | SWA  Spray Diaries |
| Pest and Disease Management | Fuel | Spray Diaries |
| Electricity | Emissions  Operating Footprint | SWA |
| Electricity Source | Electricity | SWA |
| Electricity Price | Electricity | ABS |
| Water (mega litres used) | Water quality  Water efficiency  Irrigation leaching  water scarcity  Operating Footprint  Pest and disease Management | SWA |
| Water price | Water (mega litres used) | ABS |
| Weather conditions | Fuel  Pest and disease management  Water (mega litres used)  Water Price | BOM |
| Canopy management practices | Fuel  Pest and Disease Management  Water (Mega Litres used) |  |
| Grape price | Pest and disease Management  Water (mega litres used) | SWA  Wine Australia |
| Region | Electricity Price  Weather Conditions  Grape Price | SWA |
| Market supply and demand | Grape Price |  |
| Cover crop | Fuel  Water (Mega Litres used) |  |
| Convectional vs organic | Cover Crop |  |

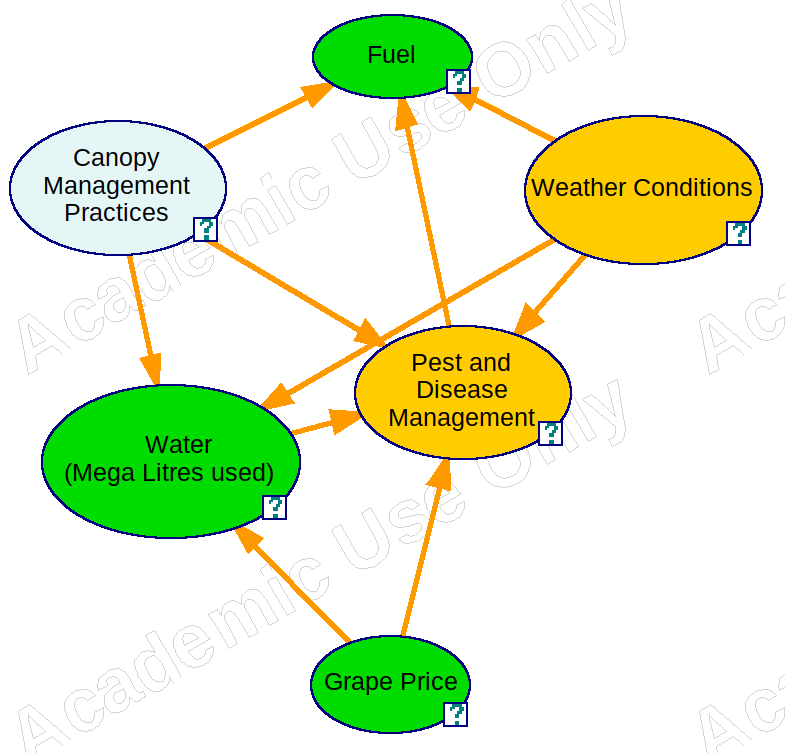
Summary of current graph structure:



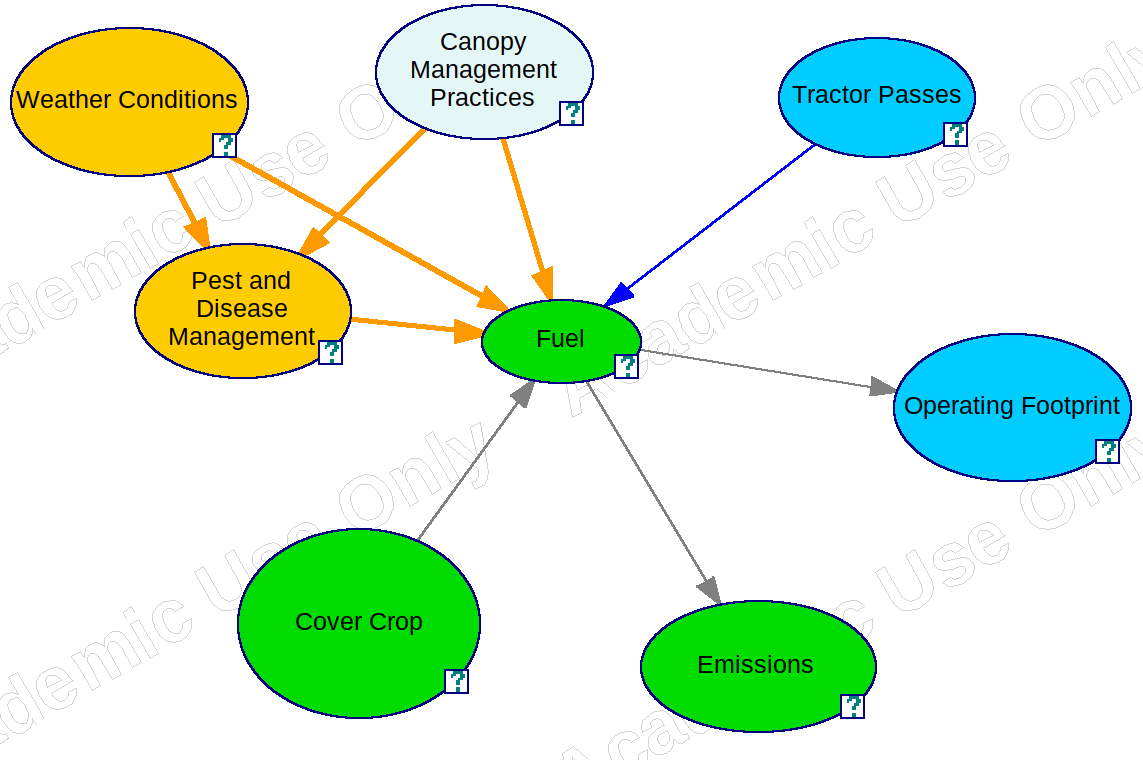
Summary of nodes connected to Water (Mega litres used)



Summary of nodes connected to Pest and disease management



Summary of nodes connected to Fuel



Summary of nodes connected to environmental impact

