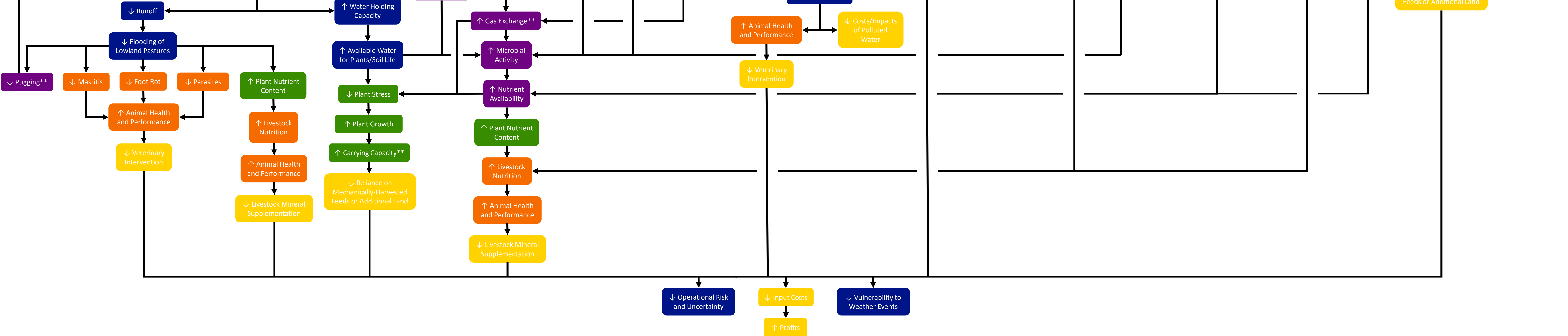






| OVERGRAZING IMPACTS FLOWCHART                                             |                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plants Grazed Before Full Recovery During Growing Season (Overgrazing) ** | Plants are recovered when: 1) regrown to at least the top of the elongation growth phase or later, 2) no evidence of previous grazing, 3) are as dark green as possible and 4) when oldest leaves attached at bottom are turning brown.              |
| Decreasing Plant Root Mass and Root Exudates**                            | Root exudates are carbohydrates, amino acids, and other biochemical compounds released by plant roots to feed the soil life responsible for binding sand, silt and clay particles into clusters called aggregates.                                   |
| Decreasing Building of Soil Aggregates**                                  | Soil aggregates are groups of soil particles that bind to each other more strongly than to adjacent particles. Soil aggregates are built and maintained by soil life beginning with bacteria and certain types of fungi.                             |
| Decreasing Food Source for Soil Life**                                    | Soil life such as bacteria and certain types of fungi receive carbohydrates, a form of energy, directly from plant roots. Without carbohydrates being released by plant roots, soil life activity is greatly reduced.                                |
| Decreasing Soil Structure (Aggregation)**                                 | Soil structure refers to the arrangement of sand, silt and clay particles. If the creation of soil aggregates is halted from a lack of root compounds being released by a living plant, the structure and aggregation of the soil begins to decline. |
| Increasing Compaction, Decreasing Pore Space**                            | As compaction increases, the empty spaces within and outside soil aggregates begins to decrease.                                                                                                                                                     |
| Decreasing Gas Exchange**                                                 | Gases include nitrogen and oxygen above the soil surface and high concentrations of carbon dioxide released from aerobic soil life. Plants absorb carbon dioxide rising out of the soil and many soil organisms breathe in nitrogen and oxygen.      |
| Increasing Pugging**                                                      | Pugging occurs when the hooves of livestock penetrate the soil surface during wet conditions causing damage to pasture plants and soil structure. Pasture plants can be torn and buried as well as soils being compacted.                            |
| Decreasing Carrying Capacity**                                            | Carrying capacity is the number of livestock a field or a grazing operation can sustain for a certain time period, usually for one year, while maintaining or improving the health of soils, plants and livestock.                                   |

| REGENERATIVE GRAZING IMPACTS FLOWCHART                          |                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Plants Grazed at or After Full Recovery During Growing Season** | Plants are recovered when: 1) regrown to at least the top of the elongation growth phase or later, 2) no evidence of previous grazing, 3) are as dark green as possible and 4) when oldest leaves attached at bottom are turning brown.              |
| Increasing Plant Root Mass and Root Exudates**                  | Root exudates are carbohydrates, amino acids, and other biochemical compounds released by plant roots to feed the soil life responsible for binding sand, silt and clay particles into clusters called aggregates.                                   |
| Increasing Building of Soil Aggregates**                        | Soil aggregates are groups of soil particles that bind to each other more strongly than to adjacent particles. Soil aggregates are built and maintained by soil life beginning with bacteria and certain types of fungi.                             |
| Increasing Food Source for Soil Life**                          | Soil life such as bacteria and certain types of fungi receive carbohydrates, a form of energy, directly from plant roots. Without carbohydrates being released by plant roots, soil life activity is greatly reduced.                                |
| Increasing Soil Structure (Aggregation) **                      | Soil structure refers to the arrangement of sand, silt and clay particles. If the creation of soil aggregates is halted from a lack of root compounds being released by a living plant, the structure and aggregation of the soil begins to decline. |
| Decreasing Compaction, Decreasing Pore Space**                  | As compaction increases, the empty spaces within and outside soil aggregates begins to decrease.                                                                                                                                                     |
| Increasing Gas Exchange**                                       | Gases include nitrogen and oxygen above the soil surface and high concentrations of carbon dioxide released from aerobic soil life. Plants absorb carbon dioxide rising out of the soil and many soil organisms breathe in nitrogen and oxygen.      |
| Decreasing Pugging**                                            | Pugging occurs when the hooves of livestock penetrate the soil surface during wet conditions causing damage to pasture plants and soil structure. Pasture plants can be torn and buried as well as soils being compacted.                            |
| Increasing Carrying Capacity**                                  | Carrying capacity is the number of livestock a field or a grazing operation can sustain for a certain time period, usually for one year, while maintaining or improving the health of soils, plants and livestock.                                   |