Strawberry Fertilization Design

1. Introduction

The purpose of this system is to present fertilization design for strawberry. This document has been established using appendix A in the technical report 'Generic fertilization applied on tomato number' number 'TR/CLAES/140/2000.5'. The modifications in the technical report 'Generic Integrated Design for Irrigation and Fertilization Applied on Tomato' number 'TR/CLAES/229/2001.10' have been considered.

2. Ontology

concept strawberry;
sub-type-of: plant;
properties:
elements: {N, P, K, Ca, Mg, Fe, Zn, Mn};
variety: { sweet charly, camarona, OG, monakhap, selva, chandler, sharoon, ofera, dorate, rosalenda, other};
source of value: user;
cardinality: single;

N ratio: {0.03};
P ratio: {0.004]
K ratio: {0.018]
Ca ratio: {0.015}
Mg ratio: {0.005}
Fe ratio: {0.00015}
Mn ratio: {0.00015}
Zn ratio: {0.0004}

concept seedling; /* has been added in this crop */
sub-type-of: plant;
properties:
type: {طازجة, مبردة};
source of value: user;
cardinality: single;

The following properties must be added to the 'macro element schedule' concept:

concept macro element schedule;
sub-type-of: fertilizer schedule;

properties:
vegetative quantity: numeric;
source of value: derived;
cardinality: single;

flowering quantity: numeric;
source of value: derived;
cardinality: single;

fruiting quantity: numeric;
source of value: derived;
cardinality: single;

The following property must be add the concept 'macro element schedule':

Application method: nominal;
source of value: derived;
cardinality: single;

3. Domain Models

domain-model: assessment model;
parts: tuple(ESTIMATE);

axioms: (plant: name = strawberry &
soil: salinity > 2.5 OR
water: salinity > 1.7)
ESTIMATE
(plantation: cultivation capability = no)

(plant: name = strawberry &
soil: salinity <= 2.5 &
water: salinity <= 1.7)
ESTIMATE
(plantation: cultivation capability = yes)

domain-model: prediction model;
parts: tuple(CONCLUDE);
tuple(DEDUCE);

axioms: (plant: name = strawberry &
seedling: type = مبردة)
CONCLUDE
(plantation: optimum yield = 12)

(plant: name = strawberry &

seedling: type = طازجة)
CONCLUDE
(plantation: optimum yield = 25)

(plant: name = strawberry &
soil: salinity <= 1 & water: salinity <=0.7)
DEDUCE
(plant: predicted yield factor = 1)

(plant: name = strawberry &
soil: salinity <= 1 & water: salinity > 0.7)
DEDUCE
(plant: predicted yield factor = 0.9)

(plant: name = strawberry &
soil: salinity > 2)
DEDUCE
(plant: predicted yield factor = 0.5)

(plant: name = strawberry &
soil: salinity > 1 & soil: salinity <= 1.5 &
water: salinity <= 1.2)
DEDUCE
(plant: predicted yield factor = 0.9)

(plant: name = strawberry &
soil: salinity > 1 & soil: salinity <= 1.5 &
water: salinity > 1.2)
DEDUCE
(plant: predicted yield factor = 0.75)

(plant: name = strawberry &
water: salinity >1.5 & soil: salinity <= 2
water: salinity <= 1.5)
DEDUCE
(plant: predicted yield factor = 0.75)

(plant: name = strawberry &
water: salinity >1.5 & soil: salinity <= 2
water: salinity > 1.5)
DEDUCE
(plant: predicted yield factor = 0.5)

domain-model: schedule model;
parts: tuple(TABULATE);

axioms: (plant: name = strawberry)
TABULATE

(micro element schedule: iron chelate quantity = (iron chelate: quantity)/20 &
micro element schedule: zinc chelate quantity = (zinc chelate: quantity)/20 &
micro element schedule: manganese chelate quantity =
(manganese chelate: quantity)/20 &
micro element schedule: application date = plantation: date + 30 &
micro element schedule: advice = 'repeat this application every 10 days during
the season')

(plant: name = strawberry)
TABULATE
(super phosphate schedule: quantity during land preparation =
super phosphate: quantity &
(phosphoric acid schedule: vegetative quantity =
(phosphoric acid 80%: quantity) * 0.25 &
phosphoric acid schedule: flowering quantity =
(phosphoric acid 80%: quantity) * 0.50 &
phosphoric acid schedule: fruiting quantity =
(phosphoric acid 80%: quantity) * 0.25 &
(potassium sulphate schedule: vegetative quantity =
(potassium sulphate: quantity) * 0.25 &
potassium sulphate schedule: flowering quantity =
(potassium sulphate: quantity) * 0.33 &
potassium sulphate schedule: fruiting quantity =
(potassium sulphate: quantity) * 0.42 &
ammonium nitrate schedule: vegetative quantity =
(ammonium nitrate: quantity) * 0.36 &
ammonium nitrate schedule: flowering quantity =
(ammonium nitrate: quantity) * 0.36 &
ammonium nitrate schedule: fruiting quantity =
(ammonium nitrate: quantity) * 0.28 &
magnesium sulphate schedule: vegetative quantity =
(magnesium sulphate: quantity) * 0.20 &
magnesium sulphate schedule: flowering quantity =
(magnesium sulphate: quantity) * 0.08 &
magnesium sulphate schedule: fruiting quantity =
(magnesium sulphate: quantity) * 0.72 &
calcium nitrate: schedule: vegetative quantity =
(calcium nitrate: quantity) * 0.20 &
calcium nitrate schedule: flowering quantity =
(calcium nitrate: quantity) * 0.08 &
calcium nitrate schedule: fruiting quantity =
(calcium nitrate: quantity) * 0.72 &
fertilizer schedule: advice =
' الكمية الأولى تضاف خلال مرحلة النمو الخضري بدءا بعد ثلاثة أسابيع من الزراعة ولمدة أربعة أسابيع تقريبا ، الكمية
الثانية تضاف خلال مرحلة النمو الزهري(ثلاثة أسابيع تقريبا)
، الكمية الثالثة تضاف خلال مرحلة النمو الثمرى(180 يوم تقريبا)
(مع توزيع كل كمية بالتساوي على فترات الرى

'macro element schedule': application method =

(يتم خلط الأسمدة بالترتيب الآتى: الماء- حمض النتريك - سلفات البوتاسيوم مع التقليب جيدا ثم يضاف نترات النشادر مع الاستمرار فى التقليب ثم سلفات الماغنسيوم ثم حامض الفوسفوريك. أما نترات الكالسيوم فتذاب مفردا فى الماء بدون خلطها مع الأسمدة الأخرى)