Supply chain Assignment (Oil Seed)

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As per given information, We have consider H set of growing areas l which ranges from 1...8 and i is the total number of fields(plants). Here, the total 8 growing area with have the processing plants in each areas with three different technology therefore, the total number of plants i is considerd to be 24.

For extraction plant we have consider the Extraction plant available in the refinary itself to be E2 (which also has a extraction plant) and have considered it to be opened with minimum level of 9000 ton/month. The other Extraction plant E1 is considered to work on three different levels.

Conclusion-

The technology T3 will be set up at the growing field plant G2 and G4 each.

The growing field G2 with T3 technology would process oilseeds for G1, G2, G6, G7 and growing field G4 with T3 techology would process for G3, G4, G5, G8.

The Extraction plant will be opened at low level at cost of 445Rs along with extraction plant E2 running at low level.

The oil transported from extraction plant at G2 and G4 to refinary will be 996 each.

The total minimum cost obtained is 15677040Rs

Let,

chi{H, I}- cost of shipping from fields to plant location

cie{I, E}- cost of shipping from plant to extraction plants

cej{E,P}- cost of shipping from extraction plant to refinary

ciq{I,P}- cost of shiiping oil from plant to refinary

f{I}- seed cake produced per tonn

oc{I}- oil content present

p{I}- processing cost

ec{E}- extraction cost

sh{H}- capacity of field at location h

ki{I}- capacity at plant i

Qe{E}- capacity of extraction plant at e

Fi{I}- cost of locating plants

fe{E}- cost of locating extraction plant E

yi{I},binary- plant is located at site i

ye{E}, binary- extraction plant is located at e

xej{E,P}- oil shipped from extraction to refinary

xie{I,E}- seed cake shipped from plant TO extraction source

Xij{I,P}- oil shipped from plant to refinary

xhi{H,I}- seed shipped from field to plant

All the Variables, Objective function and constrains are defined in the code iteself.
The attched files are
oilseed.data
oilseed.run
oilseed.mod

Solution: (Flow diagram)