moveable racks facilitating inspecting at different stages of growth with minimal shock to the plants.

Whether N.F.T. continues to expand will depend on its competitiveness with conventional methods of cultivation. It is significant that this is the only form of hydroponic growing that has made significant progress in established growing areas.

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pH AND SALINITY DEMONSTRATION AND INTERPRETATION

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pH MEASUREMENTS

There are many forms of pH meters available today. These range from pH soil testing kits for less than $10 in garden shops to very expensive and elaborate units found in research laboratories costing in excess of $600. Meters available for soil testing can be reasonably priced at about $200 and give very reliable and accurate results. The only reliable measurement of pH is via what is called a glass bulb pH electrode. When purchasing such a pH unit or electrode, get what is called a combination electrode, as it has its reference and pH electrode built in one; pH electrodes require what they call a reference electrode, but purchase of a combination electrode will not necessarily mean a purchase of another electrode.

Measuring pH is relatively simple in soil. A simple procedure is to take a sample of soil in a clean cup or beaker and add sufficient water to make up a paste rather like a sloppy mud-pie mix. Mix well and allow to stand for approximately 15 to 20 minutes. Mix again and simply insert the electrode into the mixture. Read the pH on the scale of the meter. After reading, wash the electrode down with clean water; store in clean water when not in use. The pH meter must be calibrated before use and this can only be done by immersing the electrode in a standard pH solution. Adjust the pH on the scale to the known value of the standard and you have just calibrated your instrument.

Temperature is important when measuring pH because it varies with temperature. Usually you can correct for temperature by a setting on the temperature control knob on the pH meter.

SALINITY

Measurement of salinity in soil is slightly more difficult. The pH sample you have prepared can again be used for salinity reading. Now we must extract the water from the paste, using a vacuum pump and filter. A simple water pump can be used for this. After extracting the liquid, salinity measurement is easily done by simply inserting a conductivity electrode in the solution and reading the meter.

For water samples, little preparation is required. Simply, insertion of the electrode and reading the meter is all that is required.

However, there are some problems with salinity including what do these readings mean and what type of instrument to purchase? Let's deal with the latter point first. The salinity meters vary considerably in appearance but they are all basically the same. The thing you must watch in the purchase of a meter is the type of units the meter reads. All the salinity information of any consequence is given in a unit called micro-mho or milli-mho. $1 \text{ m}-\text{mho} = 10^3 \mu-\text{mho}$. Again, the choice of electrode is important. Since soils and irrigation water have relatively low salt levels, before damage is done to crops, a cell constant (K) of 1 should be purchased. This enables you to directly read your meter without having to worry about correction factors.

Salinity or conductivity meters measure the conductance of a solution which, in turn, is a measure of the number of cation or anions in solution; i.e. how much dissolved salts are present in solution.

For water, a conductivity range in irrigation water has been developed over the years and follows something like this.

Low salt water	< 0.75 m−mho
Mod. salt water	0.75 - 2.0
High salt water	2.0 - 3.0
Very high salt water	< 3.0 - *causing severe problems.*

For soils, using the above technique for determination, the following ranges apply:

0 - 2	Salinity effect mostly negligible
2 - 4	Yields of very sensitive crops may be restricted
4 - 8	Yields of many crops restricted
8 - 16	Only tolerant crops yield satisfactorily
>16	Only a few very tolerant crops yield satisfactorily

Most crops grown in nurseries are found to grow best when soil salinity is below 4, otherwise salt problems do occur. Salt levels can be controlled by leaching or high frequency irrigation if saline water is used for irrigation. With the installation of liquid feeding using very soluble fertilizers; these fertilizers add to the salinity problem. For example, if we use 2 lb ammonium nitrate to 1,000 gallons you add approximately 0.4 to your conductivity reading. If you add, say, 1 lb potassium nitrate per 1,000 gallons also you, in effect, add 0.33 to your reading, giving you an overall salinity addition of 0.73 m mho. These levels can be very important if you already have high salt water levels. So to reduce the effects of salt, care must be taken in the selection of fertilizers and quantities used under liquid feed programmes.

CONTROL SYSTEMS FOR PROPAGATION

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A "system" may be defined as a method for the collection and presentation of facts. Its only product is information. Information collected from the system enables decisions to be made which, in turn, improve efficiency by allowing the maximum use to be made of resources and labor.

While the various operating areas of a nursery are intimately related, each one can be considered as a separate entity from the point of view of a systems design (Figure 1).

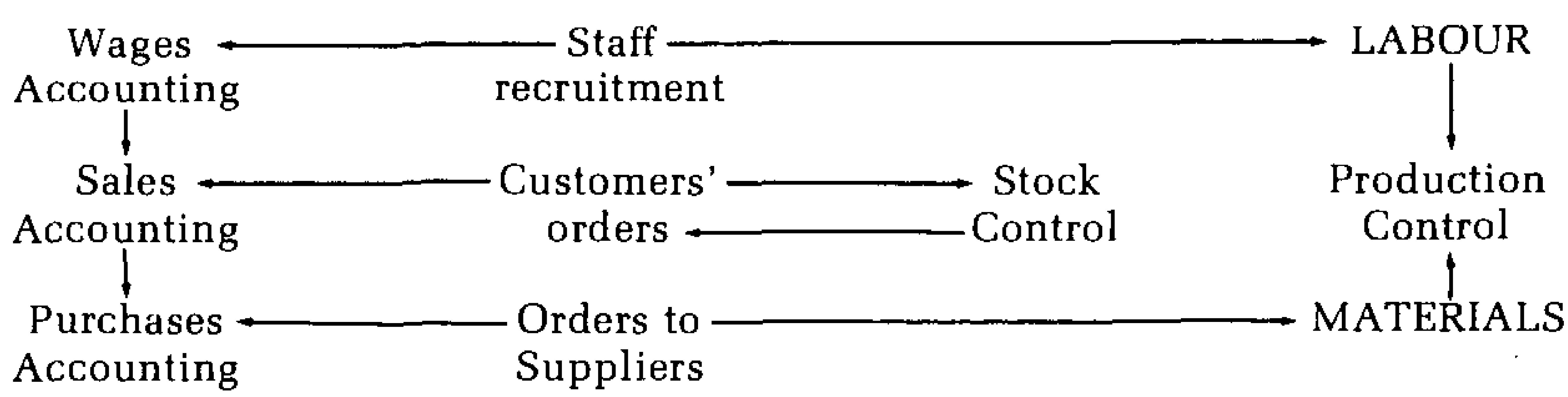

Figure 1. Interrelationships of Various Information Systems in the Nursery

It is readily accepted that every nursery has some kind of "system" for accounting, and within this system, separate methods for processing of wages, sales and purchases. It is not so readily accepted that every nursery should have a system for the control of its stock and production. Before proceeding to designing the system it is necessary to consider fundamental requirements for any system. These are:

1. It must be cost efficient. This means that it must not