Dr. Carr :

I would like to make a comment on Dr. Seaforth's paper on his method of analysis for anthocyanin. I observed that the absorption at 445 mu is rather small and I think this is very fortunate. In analyses that I have carried out, the absorption at 445 mu was tremendous compared with the anthocyanin peak, and we had to eliminate the interference effect due to that flavonold material at 445 mu by measuring the height of the anthocyanin peak above the base level shown by the dotted line there. If you intend to use a colourless variety as your standard, you would have to be careful that no other flavonoid is being developed by your treatments introducing a large absorption at 445 mu which would interfere with the anthocyanin concentration readings. And the second point I would like to make is about the relationship of sugar to anthocyanins. Dr. Sidrak, you might not have known about this very recent work at Cornell University. We were able to induce very high levels of sugar in leaves by exposure to low temperatures without producing any anthocyanin, but immediately nitrogen deficiency was initiated by withholding nitrogen from our sand culture solutions we got tremendous amounts of anthocyanin.

Dr. Sidrak :

I would like to ask Dr. Seaforth a question about the anthocyanin production in the sweet potato, and that is it a known fact, and this is work of Teeman some years ago about 1948—1950, in that the amount of anthocyanin although it is affected or controlled genetically, yet it is affected by the accumulation of carbohydrate in particular, sucrose. They have shown that experimentally, and here now I would like just to ask if because of the results here, where we have got the leaves giving nitrogen, the amount of anthocyanins were depressed because of the use of carbohydrates in the make up of the nitrogenous compounds as long as nitrogen is available. I would like to ask Dr. Seaforth if he has tried to determine the sucrose content of these plants which have shown large amounts of anthocyanin production.

Dr. Seaforth :

No, I have not.

Dr. Seaforth :

Are you referring to figure 1.

Dr. Carr :

Dr. Seaforth :

Well figure 1 shows that the 445 mu peak is associated with an alcoholic extract and this is why, when you read the paper probably a bit more casually, you will see that the method associated for estimation of anthocyanin in tubers is one using an aqueous, not alcoholic solvent. The alcohol dissolves flavonoids and carotenoids. The 445 mu peak is associated with the carotenoid region, the chloroplast sortof pigment. Between 500—550 mu peak is always associated with the anthocyanin sort so that even though 3 curves appear in figure 1 only two are applicable to the tubers root study, the third one is applicable directly to the stem study because the figure says so clearly.

Dr. Carr :

We used the aqueous HCL extract, 1+1 and the absorption in the 400—500 mu region in the aqueous extract was very high for the material that we used. This was with extracts of leaves. It may be that the sweet potato does not possess these other flavonoid compounds. Have you found tremendous amounts of other flavonoid compounds in the sweet potato material?

Dr. Seaforth :

There are other flavonoids, the leukoanthocyanins and the like, but they should not affect the 440 milliu region at all. The 440 is associated with yellow and orange colours to the naked eye and therefore you must have a water soluble carotenoid there as well. In the sweet potato so far, none of these carotenoids are water soluble. When I say water soluble I mean they would not dissolve in water under acid conditions. You need an alcoholic or soluble solvent sort of thing to extract, then they are chloroplast.

Dr. Carr :

I was talking about yellow water soluble flavonoid compounds, not carotenoid compounds, extracted in 0 1 N. aqueous HCL.

Dr. Seaforth :

Well any flavonoid compounds are supposed to absorb mainly if they are pigmented and they are flavonoid. They are supposed to absorb in the 360 plus region rather than at 440 plus. I would like to know what they are, chemically speaking I mean, because all the flavonoid absorption peaks are associated with the phenolic chromophores which are either in the 280 milliu region, which is not visible or the 365 region which, as I said, is associated with flavones, flavonols, flavononols and the like, and then there is a jump, there if nothing in the 400 region normally, except you get a carotenoid and a big jump into the 520 region. There are water soluble carotenoids. I would like to have a look at that again.

Mr. MacDonald :

I would like to make a comment on this purple mottling. It also occurs in Uganda with the sweet potato seedlings but you might be interested to know that in most cases it is associated with mature tubers in Uganda, and the characteristic disappears in the mature tubers at harvest. Only in a very few of the seedlings will you find purple mottling in mature tubers.