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DETERMINATION OF THE STARCH OF POTATOES BY COMPARATIVE HEAVY

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Abstract:
This article describes the determination of the amount of starch in potatoes based on its relative weight in water and air.

Keywords: productivity, starch content, root volume, specific gravity, water environment, weight in water, weight in air.

Since the amount of starch in the crop depends on the potato variety and the size of the tubers, this should be taken into account. In this case, the amount of starch is proportional to the size of the potato, and the amount of starch is determined depending on the size of each potato.

The starchiness of potatoes is determined by its specificity, that is, its weight. This method is determined based on the ratio of the weight of potatoes to the weight of water.

Because, according to Archimedes' law, when a body is immersed in water, it loses weight by the weight of the liquid it displaces, and then based on the weight loss of a certain amount of potatoes expressed in grams, you can calculate the weight of a potato in grams. By knowing the weight loss in aqueous medium, you will be able to know the specific gravity.

The specific mass of potatoes is determined as follows.

$$\text{Uk} = \frac{q}{q - qv}$$

In this; Uk specific mass; q- theft of potatoes in the air; qv- theft of potatoes in water.

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The weight of 5000 g of potatoes in water is in grams	Lost theft gram	Dry Matter %	Starch %	Weight of 5000 g potatoes in water	Lost theft gram	Dry Matter %	Starch %
290	1.0616	15,748	9,996	495	1.1099	26,085	20.383
295	1.0627	15,948	10.232	500	1.1111	26.341	20,589
30	1.0638	16.219	10.467	505	1.1123	26.598	20,846
305	1.0650	16,476	10.724	510	1.1136	26,876	21.124
310	1.0661	16.711	10,959	515	1.1148	27.133	21.381
315	1.0672	16,947	11.195	520	1.1161	27.411	21,659
320	1.0694	17.204	11.452	525	1.1173	27,668	21,916
325	1.0695	17.439	11,687	530	1.1186	27,946	22.1994
330	1.0707	17,696	11,944	535	1.1198	28.2023	22.451
335	1.0718	17.931	12.179	540	1.1211	28.481	22,729
340	1.0730	18.188	12.436	545	1.1224	28,760	23.008
345	1.0741	18.423	12.671	550	1.1236	29.016	23.264
350	1.0753	18,690	12.908	555	1.1249	29,295	23,543
355	1.0764	18.918	13.164	560	1.1261	29,551	23,799
360	1.0776	19.172	14.420	565	1.1274	29,830	24,078
365	1.0787	19.408	13,656	570	1.1286	30,086	24.334
370	1.0799	19,665	13.913	575	1.1299	30,365	24.613
375	1.0811	19,921	14.169	580	1.1312	30,643	24.591
380	1.0822	20.157	14.405	585	1.1325	30,921	24,891
385	1.0834	20.414	14,662	590	1.1338	31.199	25.169
390	1.0846	20,670	14,918	595	1.1351	31,477	25,447
395	1.0858	20,927	15.175	600	1.1364	31,756	26,725
400	1.0870	21.184	15.432	605	1.1377	32.034	26.004
405	1.0881	21.419	15,667	610	1.1390	32.312	26.282
410	1.0893	21,676	15,924	615	1.1403	32,590	26,560
415	1.0905	21,933	16.181	620	1.1416	32,868	27,838
420	1.0917	22.190	16.438	625	1.1429	33.147	27.116
425	1.0929	22.477	16,695	630	1.1442	33,425	27,395
430	1.0941	22.703	16,951	635	1.1455	33.703	27,678
435	1.0953	22,690	17.208	640	1.1468	33,981	28,951
440	1.0965	23.217	17,465	645	1.1481	34.259	28.229
445	1.0977	23.474	17.722	650	1.1494	34,538	28.507
450	1.0989	23.731	17,979	655	1.1507	34,816	29,786
455	1.1001	23,987	18.235	660	1.1521	35.115	29,064
460	1.1013	24.244	18.492	665	1.1534	35.391	29,363
465	1.1025	24.501	18,746	670	1.1547	35,672	29,642
470	1.1038	24,779	19.027	675	1.1561	35,971	30,920
475	1.1050	25,036	19.284	680	1.1574	36.249	30.219
480	1.1062	25.293	19,541	685	1.1587	36,528	30,495
485	1.1074	25,549	19,797	690	1.1601	36,827	31,776
490	1.1086	25.806	20,054				

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The content of potatoes is composed only of organic acids, glucoses and similar substances without starch, the difference between which is the constant 5.572% non-starch content.

In 1879, Behrend, Merker and Morgen, with many attempts, compiled a table of the relationship between potatoes and weight. And dry matter and starch content were determined analytically. Then it was tested and expanded in 1907. G. Fotom found that using flour, it is possible to find the amount of starch in it using the specific gravity of potatoes.

Scales for determining the volume weight of potatoes: Reiman scales (Fig. 12). These scales represent decimals, two scales are hung on their short arms, one of them is filled with stones, and the other is filled with potatoes. The basket filled with tuganak is placed in a water bath

Determination of the starch content of potatoes on these scales is carried out as follows: potatoes (5000 grams) in the above iron basket should be dry and free from impurities. In this case, stones are placed on the next stage of the scale and brought to a balanced state. oh

Then the iron basket with potatoes is lowered to the bottom of the water and weighed and brought back to balance. In this case, the water temperature should be 17.5 degrees Celsius. The basket should always be filled to a uniform depth. 1.5% of the found starch belongs to shaker substances.

It is recommended to perform the following actions to check the received antibodies.

1.   Determine the starch content of potatoes in kg using the Reimann scale

To do this, wash and dry potato tubers under water. The temperature of the water will be 17.5 degrees and the weight will be 490 grams. According to Table 3, this value is given in the last row. The lost weight was 1.1086. The dry matter was 25.806%, and the amount of starch was 20.054%.

Determine the dry matter content of a 16380 kg batch of potatoes for testing. Let's find out where the above values (25.806 %; 20.054 %) were found.

$$S = \frac{Q * s}{100} + \ kgr$$

In this case, the weight of Q-potato is 16830; s- amount of dry matter; 100% conversion rate

We find that there is 16380*25.806/100=4227.02 kg of dry matter.

2.   To determine the amount of starch, the following work is done.

In this case, the weight of Q-potato is 16830; a- amount of dry matter; 100% conversion rate.

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$$K = \frac{Q * a}{100} + kgr$$

We find that there is 16380*20.054/100=32585 kg of dry starch.

As mentioned above, 1.5% of starch belongs to sugar, and the amount of sugar in potatoes is determined by the following formula.

$$K = \frac{Q * (a - 1.5)}{100} + kgr$$

16380*(20.054-1.5)/100=303914 kg

To calculate the resulting starch in a completely dry state, the following actions are performed.

$$\frac{16380 * (20.0.54\ ) * (1 - \frac{3}{100})}{100}$$

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