

Use of Root Crops in Increasing the Starch Content of Compound Feed Products

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Abstract: Root crops such as carrots, potatoes, turnips, sweet potatoes, beetroot, cassava, and sugar beets are utilized in various food industries for producing flour, chips, snacks, confectionery, vegetable oils, starch-syrups, beer, and alcohol. Root crops are also used as raw materials for producing compound feed products and as tasty additives for livestock. Carrot root, for instance, contains 9-10 % starch, 4-6 % fiber, 65-70 % carbohydrates, and 14 % vitamins. Sugar beet, a root crop, is highly valued for its starch and carbohydrate content, serving as a palatable addition to animal diets. Sugar beet root consists of 73.6 % carbohydrates, 10.8 % starch, 2.2 % fiber, 1.8 % ash, and 12 % water. Root crops play a significant role in increasing the starch content of compound feed products due to their high starch content and palatability. Root crops typically contain 24-28 % starch, 46-50 % carbohydrates, 2-4 % fiber, 8 % lysine, and 7 % arginine.

Keywords: Root crops, starch, carbohydrates, fiber, compound feed products.

INTRODUCTION

The demand for food products, particularly for compound feed products, is increasing day by day. To meet this demand fully, it is necessary to continuously develop agriculture, especially the field of root crop cultivation. The production of compound feed products is increasing annually in our country, and its assortment is expanding, indicating the growing biological efficiency. The rapid development of the compound feed industry and its expansion into developed areas demonstrate the significant economic importance of using root crops.

All active substances are necessary for the normal life activity of animals. When studying the composition of feed grains, it was found that nearly 50 chemical elements of the Dmitri Mendeleev periodic system are present. These include nitrogen, carbon, iodine, oxygen, calcium, and other substances. Approximately 95% of the organism's mass consists of four elements: carbon, oxygen, hydrogen, and nitrogen. This composition is also present in plant cells. These four elements are present in various proportions in animal and plant cells and produce many substances. To ensure the normal growth and development of the animal organism, the compound feed factories play a fundamental role in supplying the necessary amount of substances stored in the feed.

LITERATURE REVIEW

Types of Root Crops: Physically, root crop products come in several forms. These include shredded, briquetted, granules, and pellets.

Shredded Root Crops: Shredded root crops are products that have been finely chopped and mixed. For the production of shredded root crops, ingredients are ground and mixed from a single source, then milled and processed into a finished product.

Briquetted Root Crops: Briquetted root crop products are usually produced in a fully rational manner. The shape of the briquettes is octagonal, with a length of 160-170 mm, a width of 70-80 mm, and a thickness of 30-60 mm. For the production of briquetted root crops, a milled mixture of ingredients with milled beet pulp is prepared. The resulting dry mass is treated with a special binder and, at the same time, molasses is added. The mass, consisting of the mixture of beet pulp and molasses, is then fed into presses and briquetted.

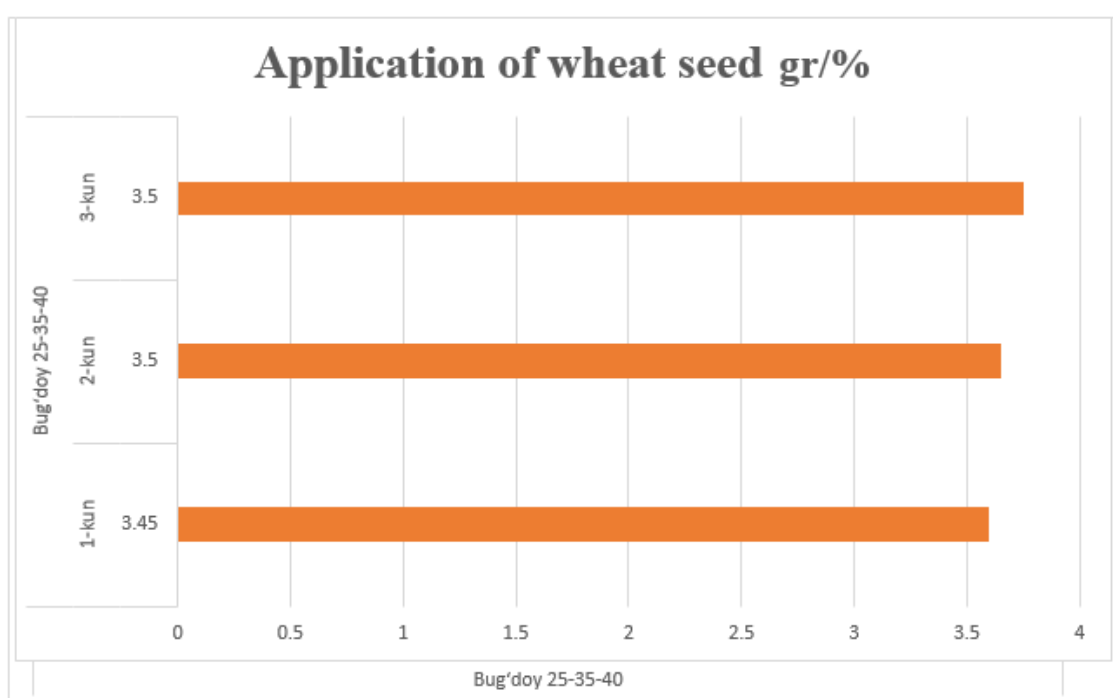
Granulated Root Crops: Granulated root crop products are cylindrical in shape and have a certain diameter and height. Granules are produced in two ways: dry and wet. Granulated root crops are mainly used to feed poultry and pond fish.

Pelleted Root Crops: Pelleted root crop products are shaped like round pellets. For the production of pelleted root crops, shredded root crops are first taken, then a soft dough is prepared from them, pellets are formed, cooked, and dried. Pelleted root crop products are divided into two main groups based on their composition and feed value: complete rations and concentrates.

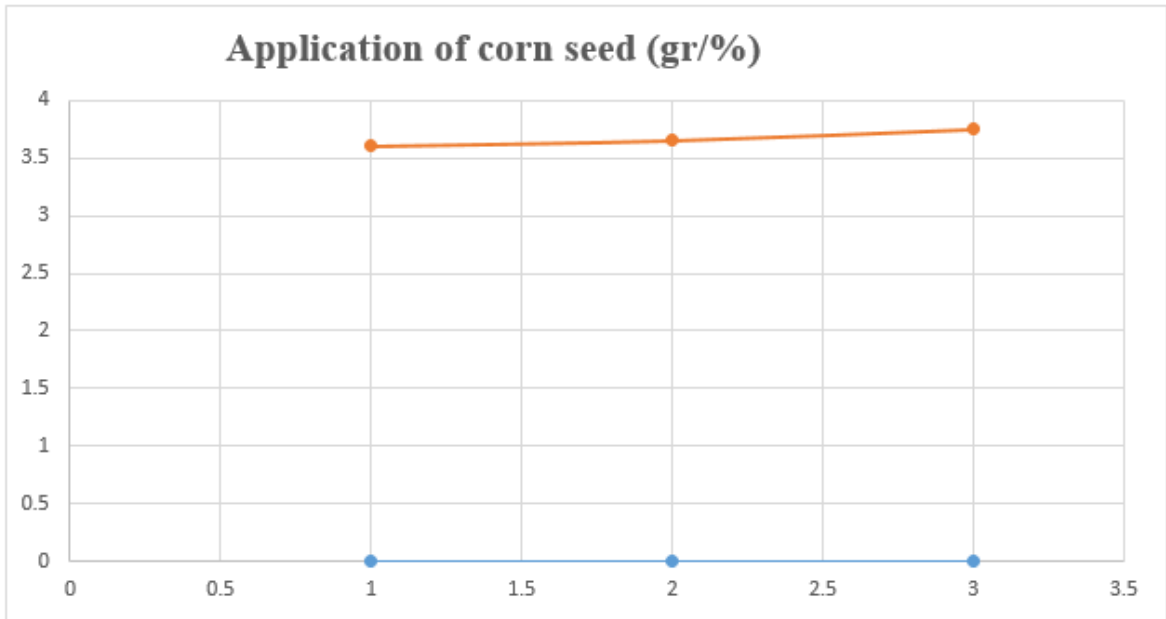
ANALYSIS AND RESULTS

To increase the starch content of compound feed products, we use root crops such as carrots, sugar beets, and cassava. In this regard, the following indicators were used in the preparation of compound feed. Starch from the roots of cassava was used to increase the starch content of compound feed. The roots of all products were used for shredding.

Application of flax seed meal (gr/%)		
Bean	Wheat	Corn
25	35	40
30	35	35
40	30	30

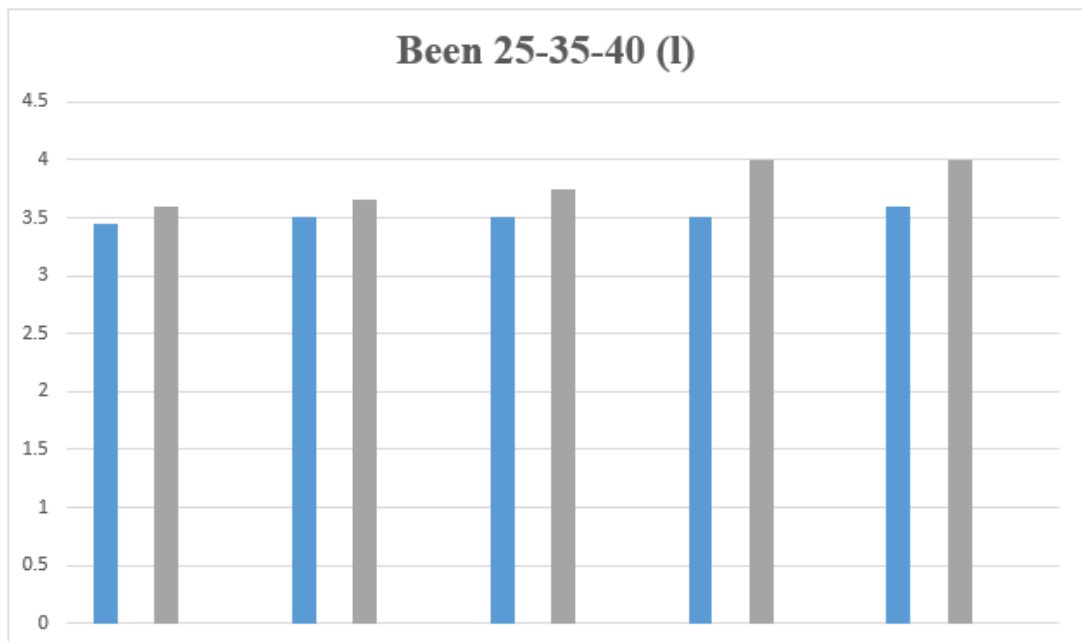


Application of wheat seed (gr/%)		
Wheat	Bean	Corn
25	35	40
30	35	35
40	30	30

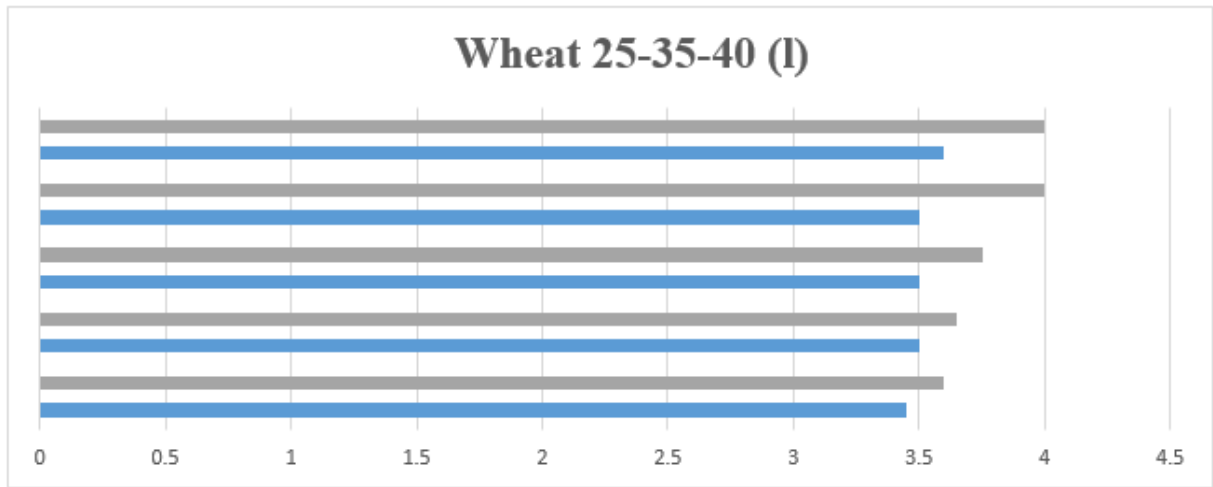


We will consider the increase in protein content when these products are given in the specified amount (g) and the increase in milk content when given to black cattle:

Been 25-35-40 (I)				
1-day 2	2-day 2,200	3-day 2,350	4-day 3	5-day 3
6-day 3,050	7-day 2	8-day 3,300	9-day 3,300	10-day 3,200
11-day 3,320	12-day 3,350	13-day 3,400	14-day 3,400	15-day 3,400



Wheat 25-35-40 (I)				
1-day 3,450	2-day 3,500	3-day 3,500	4-day 3,500	5-day 3,600
6-day 3,600	7-day 3,650	8-day 3,750	9-day 4	10-day 4



Summary: When it comes to compound feed production, compound feed products are beneficial in producing starch-rich goods. This benefits both human consumption and livestock, enhancing milk and meat production by providing a source of starch and vitamins. The utilization of compound feed products differs based on their starch and vitamin content and their palatability. The field of livestock farming not only provides the population with high-calorie food products such as meat, milk, yogurt, and eggs but also supports the food industry by providing raw materials and improves soil fertility in agriculture.

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