A METHOD FOR SELECTING ASPARAGUS VARIETIES WITH A LONG FIBRELESS TOP

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ABSTRACT

The selection of varieties which have longer fibreless tops than the existing varieties is thought to be of importance for canning. A rapid and simple method of determining the fibre content, based on the breaking of the spear, has been developed. If the spear is broken in a certain manner, the borderline between the fibrous and fibreless region coincides with the fracture. It appears that the length of the fibreless top is correlated with the total length of the spear. Based on the above data an apparatus has been designed for rapidly analysing a large number of spears in the field. To this end the spears may have to be grown green instead of white during one season. Possible faults of the method and the practical value of varieties with longer fibreless tops are discussed.

INTRODUCTION

The cultivation of asparagus with a low fibre content is attractive from the viewpoint of reducing losses from processing (HUYSKES, 9). A handicap is the absence of a rapid method to determine the fibre content. In the following sections a usable method is described.

METHODS FOR DETERMINING THE FIBRE CONTENT

On behalf of the canning industry various methods for determining the fibre content have been developed in the course of years. In addition to the “tenderometer” (JENKINS and LEE, 11) and the “shear-press” (WILEY, 14), used to measure the resistance of asparagus spears to pricking and cutting, there are also a number of direct methods. With the aid of these, the fibre is isolated from the spear and the amount determined by weighing (SMITH and KRAMER, 13). Selecting asparagus with the above methods will probably lead to the production of plants that are low in fibre, to be sure, but which are also too limp and readily blown over by wind. Such a plant was found in Brunswick by HUCHEL (8).

To obviate these difficulties a different principle has been followed in selection. According to American data, the top of a spear of 20 cm is normally fibreless over a length of rather more than 10 cm (Anonymus, 1, CULPEPPER and MOON, 5). In some cases the fibreless region is even longer (SCHERMERHORN, 12), while the length can vary considerably (SMITH and KRAMER, 13). If a spear is bent over in a certain manner it will eventually break at a point where, measuring from above, the fibre begins to be tough. (BARRONS, 2; CAROLUS, 3 and SCHERMERHORN, 12). So it appears to be possible
to determine the length of the fibreless top, simply by breaking the spear. It is on this possibility that the selection method described hereafter has been based.

**SELECTION FOR A LONG FIBRELESS TOP**

When working out the selection method a complication was encountered. In the course of a study trip to England (Couwenberg, 4), made under the direction of the present author, some English growers remarked that the length of the fibreless top would increase with an increase in spear length. These remarks were checked in the Netherlands and found to hold good (see below). Consequently, in selection it is not sufficient to measure the top only, but the length of the whole spear should be determined. This is hardly feasible in white asparagus, which is cut below the ground, so the practice of ridging was replaced by level culture in which green spears are formed of which the tops are broken off, measured and compared with the total length of the spears. If the length of the top is great in relation to that of the spear, the spear was marked. From an examination of the spears which are formed successively, an impression of the plant is gained with respect to the length of the fibreless top.

**SELECTION APPARATUS AND WORKING METHOD**

In order to be able to work rapidly, a simple apparatus has been designed (Fig. 1). It consists of a trapeziform board, of which two adjacent angles are right. The breadth is 30 cm, the height 20 and 50 cm respectively. On the board a selection line has been drawn, which will be described in more detail later in this paper. Behind the board is a container for transporting the snapped tops and a handle for carrying. To analyse a spear the apparatus is placed in such a manner that the spear top coincides with the oblique upper side (Fig. 1). The spear length is variable, as it is hardly feasible to analyse always at the same spear length, because of the very rapid growth of the young green spears (Culpepper and Moon, 5). Then the spear top is bent over until the spear breaks at the junction of the fibrous and fibreless region (Fig. 2). Breaking is best done in the morning, when the spears are turgescant. If the breaking point lies below or above the selection line on the board, then the fibreless top is respectively long or short (Fig. 3). In the former case, the remaining stump is marked by cutting it at an angle (Fig. 4); in the latter case the stump remains as it is (Fig. 3). As a rule these stumps do not sprout further, but eventually shrivel up. By applying the above method throughout the harvesting period, a reliable impression can be obtained not only of the fibre content but also of the yields from the various plants. To this end the stumps of each plant are counted directly after the harvest and graded as thick, thin and normal. When harvested in the conventional way, the plant would have yielded the same number of respectively thick, thin and normal spears.

In the autumn the foliage and spear development of the choice plants can be determined, including their degree of firmness. The following spring data on earliness and quality can be collected (cf. Huyskes and Sneep, 10).

Mention has already been made of the selection line on the apparatus. In order to determine its exact position calibration is necessary. This is done as follows. Behind the breaking point a dot is put on the selection apparatus with a lead-pencil (Fig. 3).