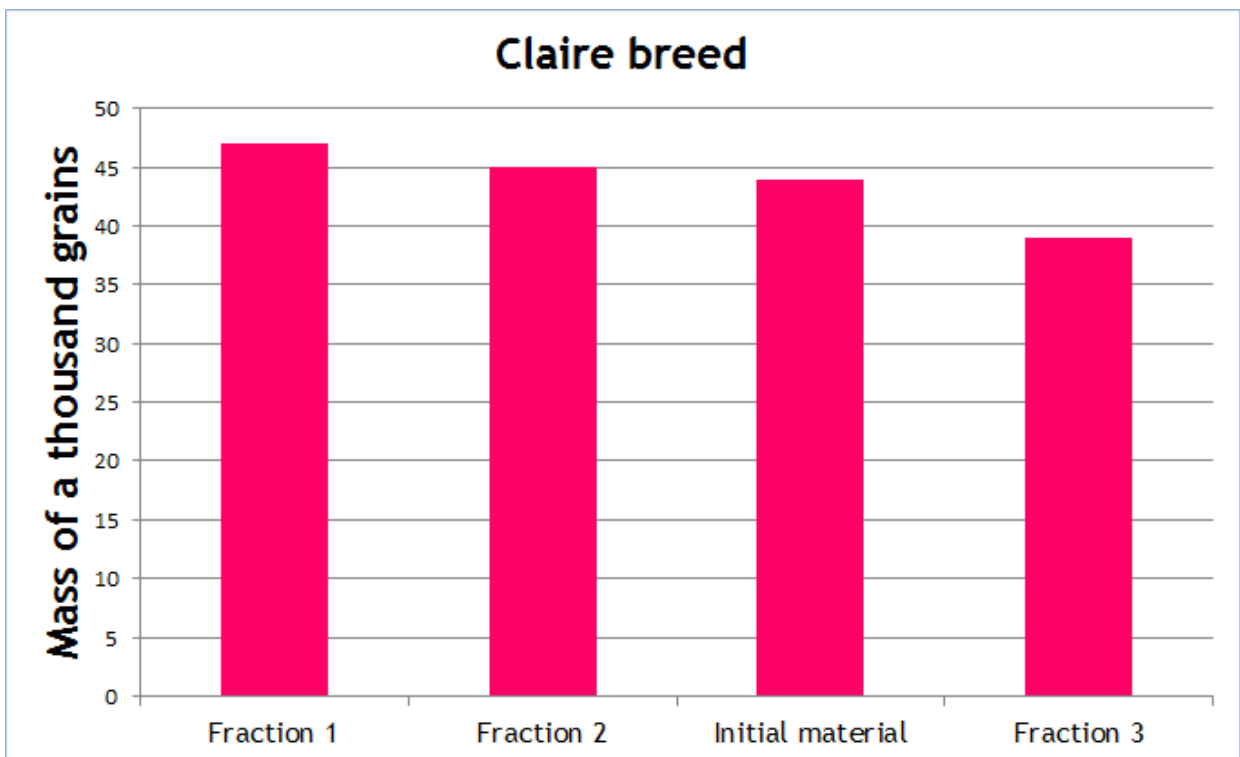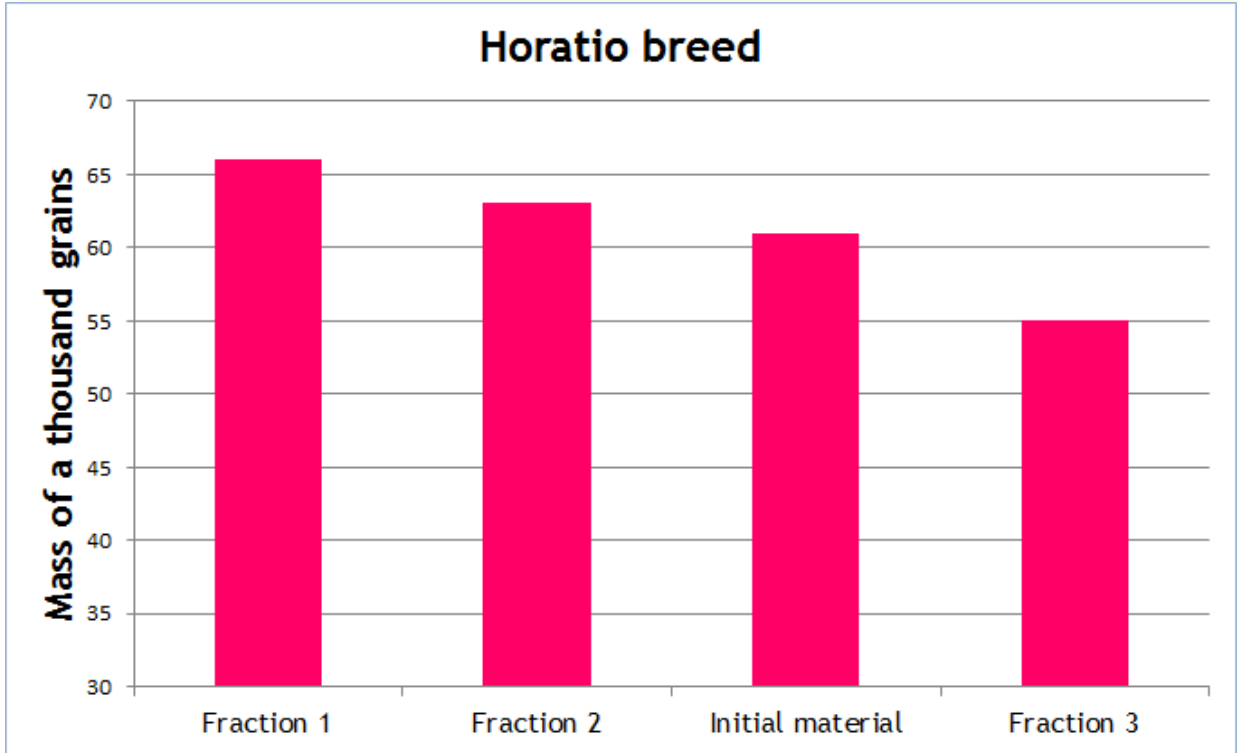## Research in UK with yield in fractions by density, autumn wheat.

In 2010/11 research was conducted on eight varieties of winter wheat: Horatio, Claire, Stigg, Oakley, Gravitas, Gallant, Duxford, Invicta, in four field trials in the UK. The winter wheat seed was pre-calibrated with a CAD machine according to the specific weight. The research, carried out by NIAB TAG on behalf of Plot Feeds Ltd, found that the **absolute weight of seeds** significantly increased. And the same tendency was noted in all eight of the studied winter wheat varieties (see Table 1, Table 2).
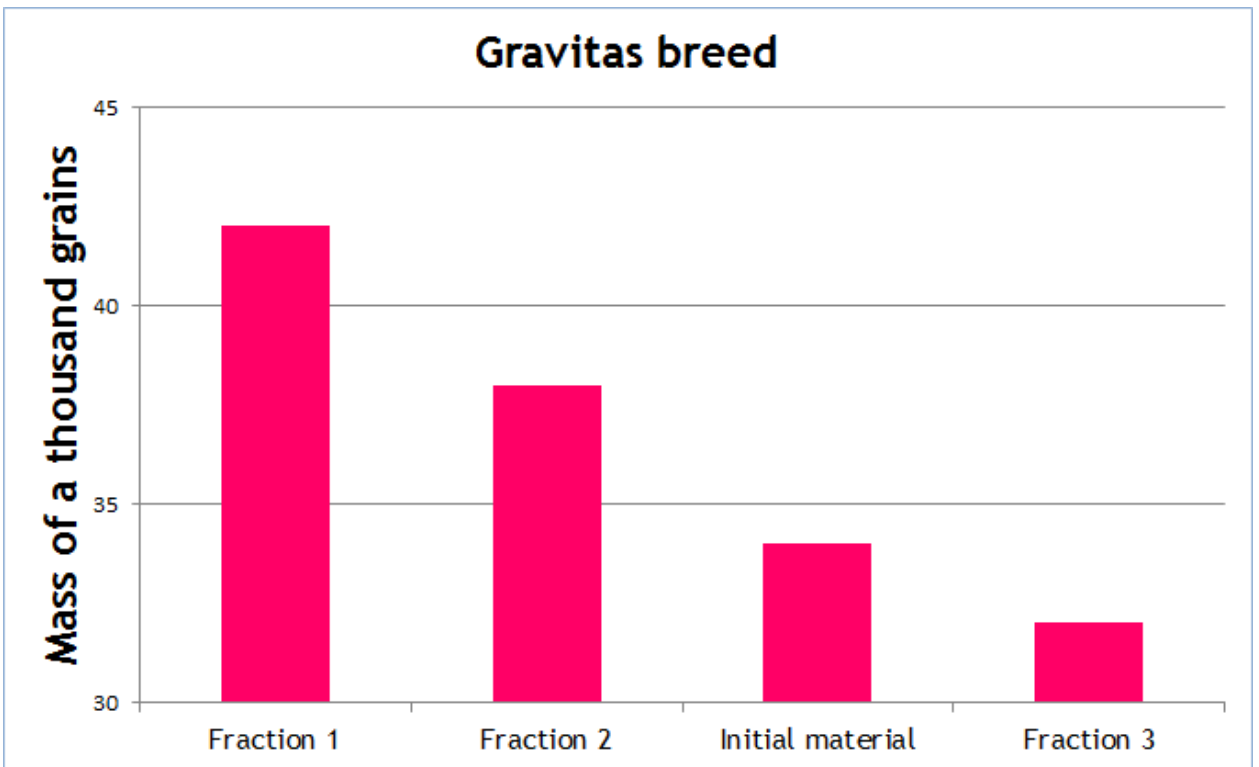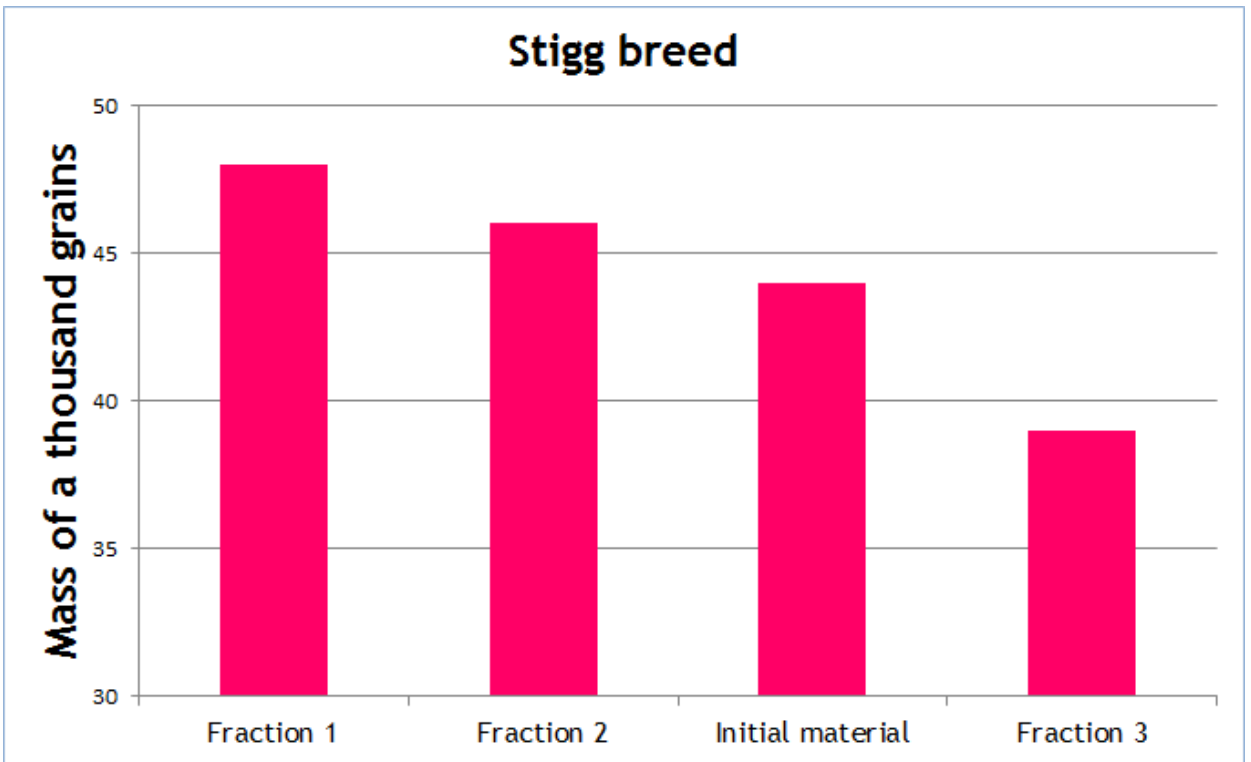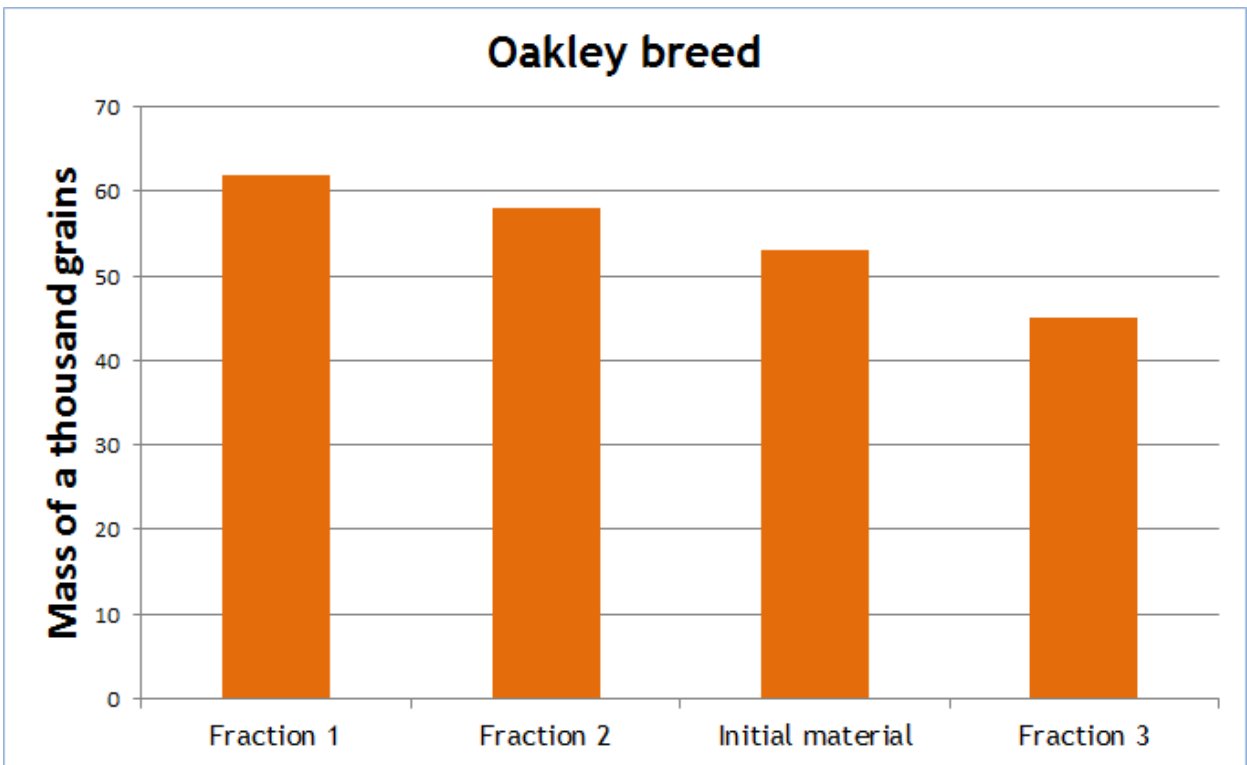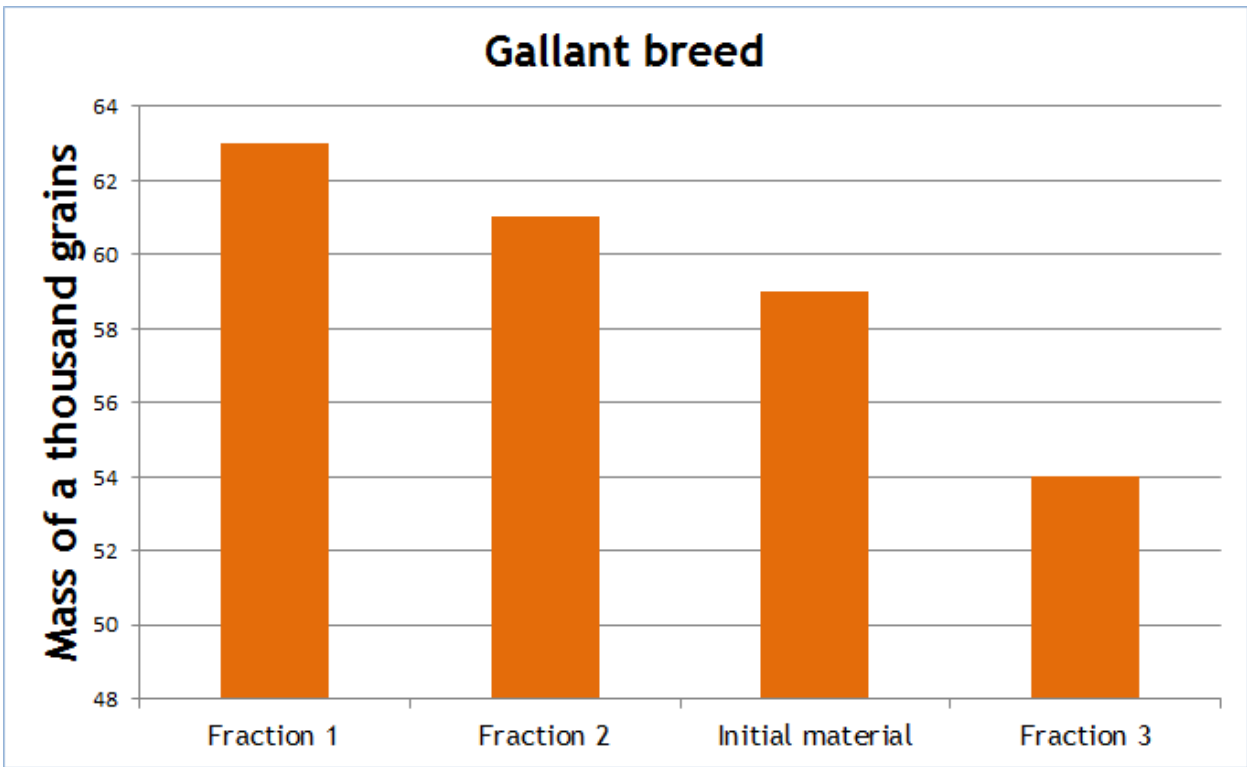
Table 1

Stigg breed

Mass of a thousand grains

Fraction 1 | Fraction 2 | Initial material | Fraction 3

Gravitas breed

Mass of a thousand grains

Fraction 1 | Fraction 2 | Initial material | Fraction 3

Table 2

Gallant breed

Mass of a thousand grains

Fraction 1, Fraction 2, Initial material, Fraction 3

Oakley breed

Mass of a thousand grains

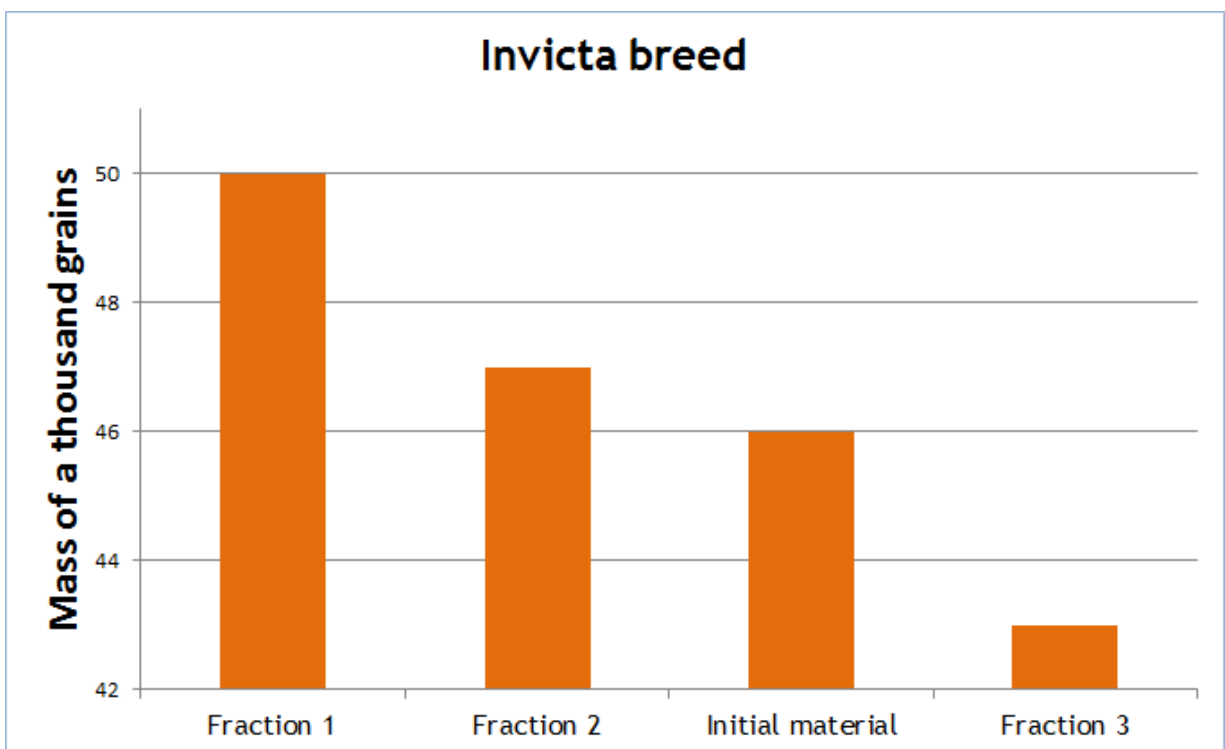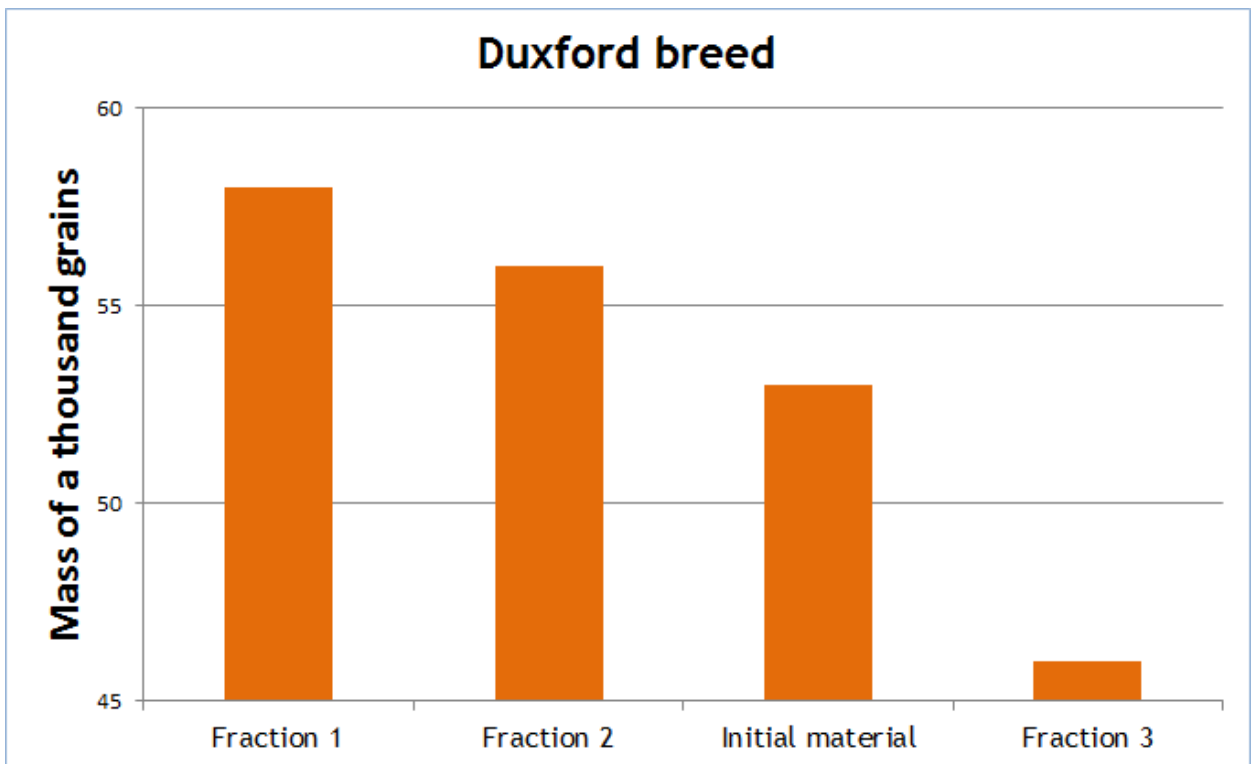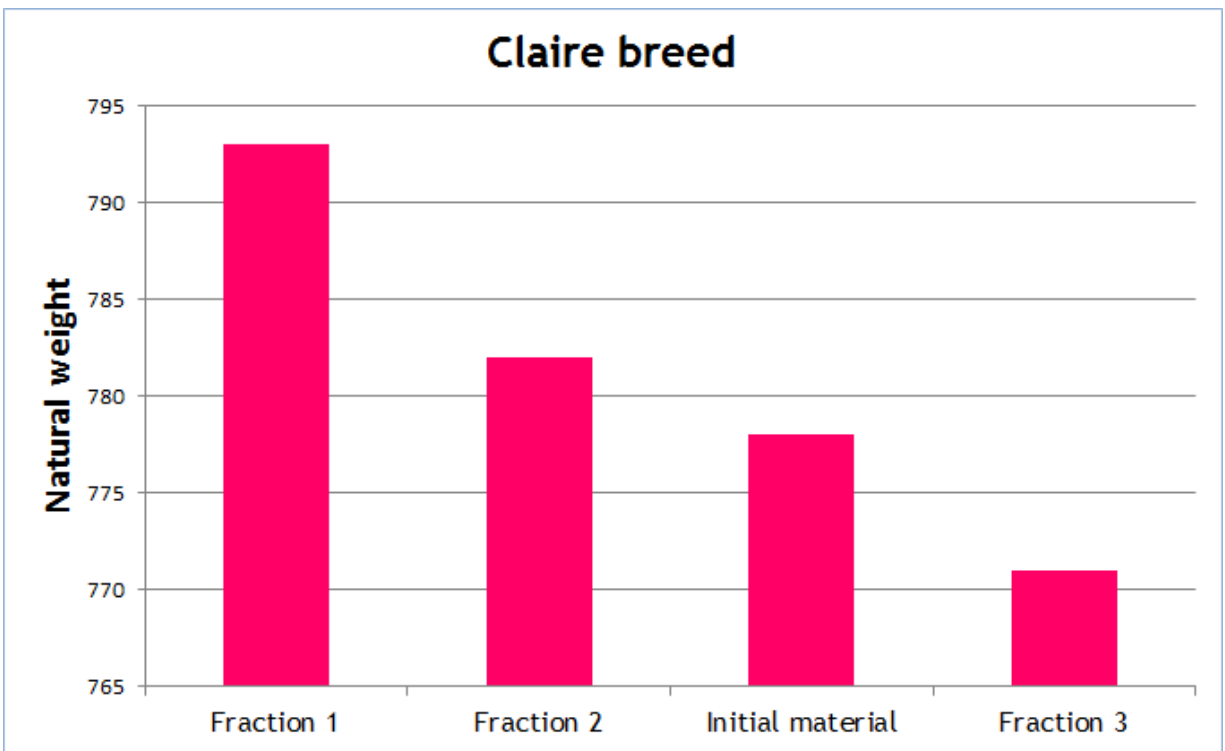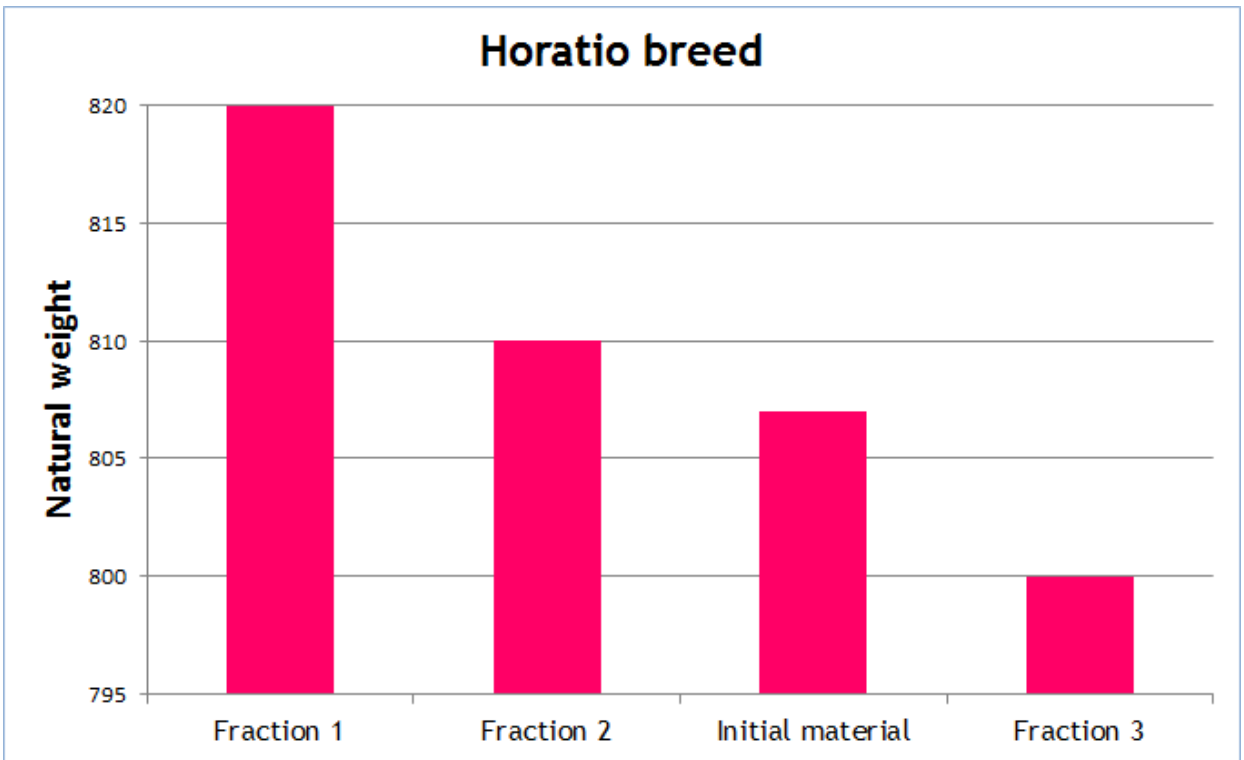Fraction 1, Fraction 2, Initial material, Fraction 3

Duxford breed

Invicta breed

Histograms of the natural weight of the grain clearly demonstrate improvement (increase) of this indicator in 1 and 2 fractions (see Table 3, Table 4).

Table 3
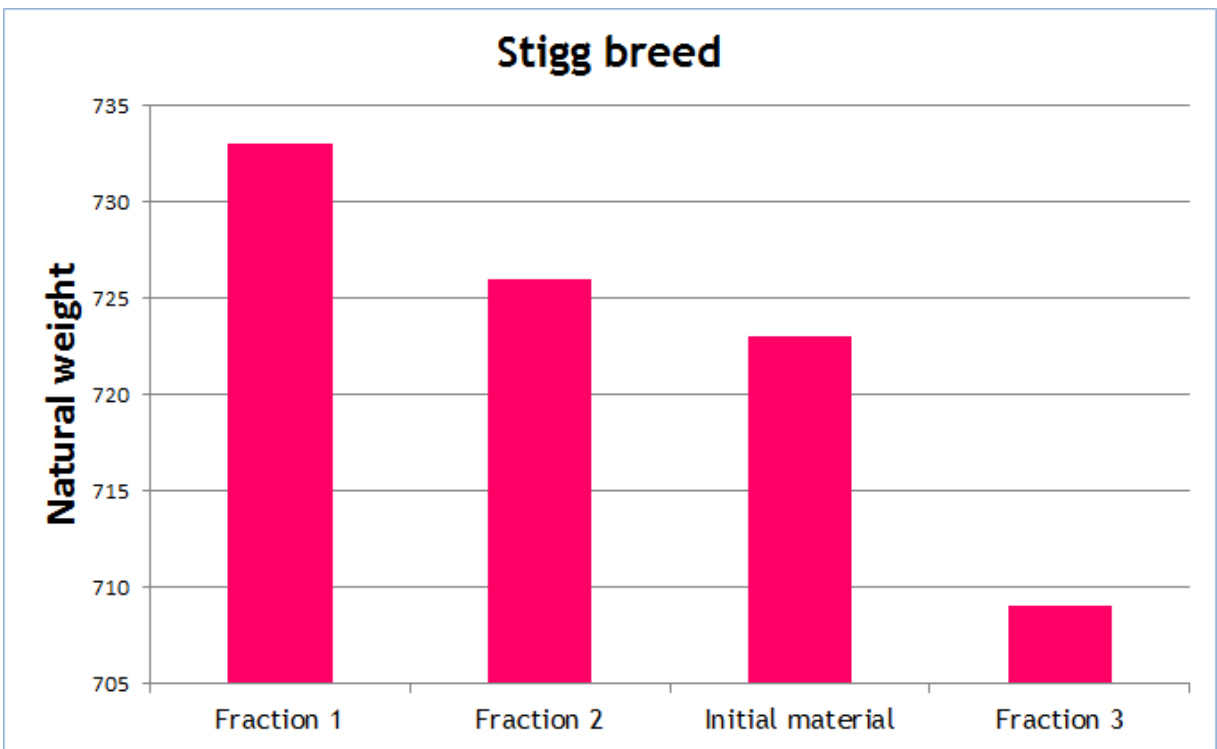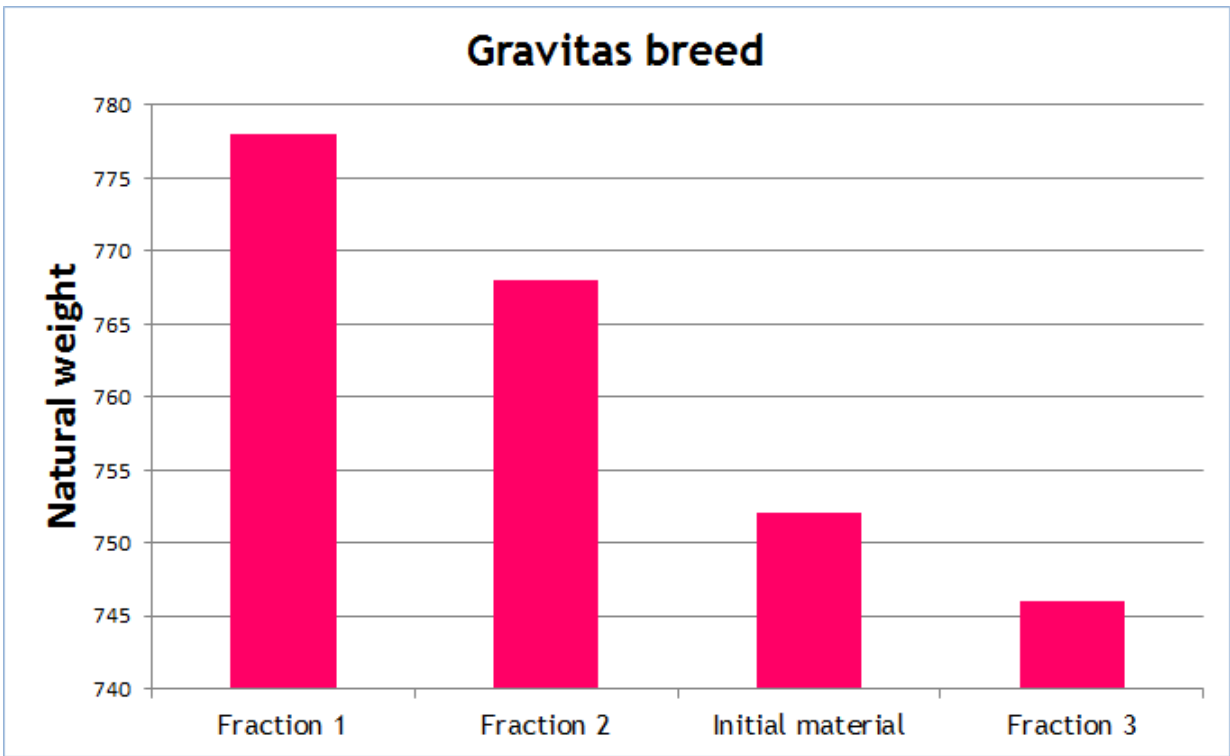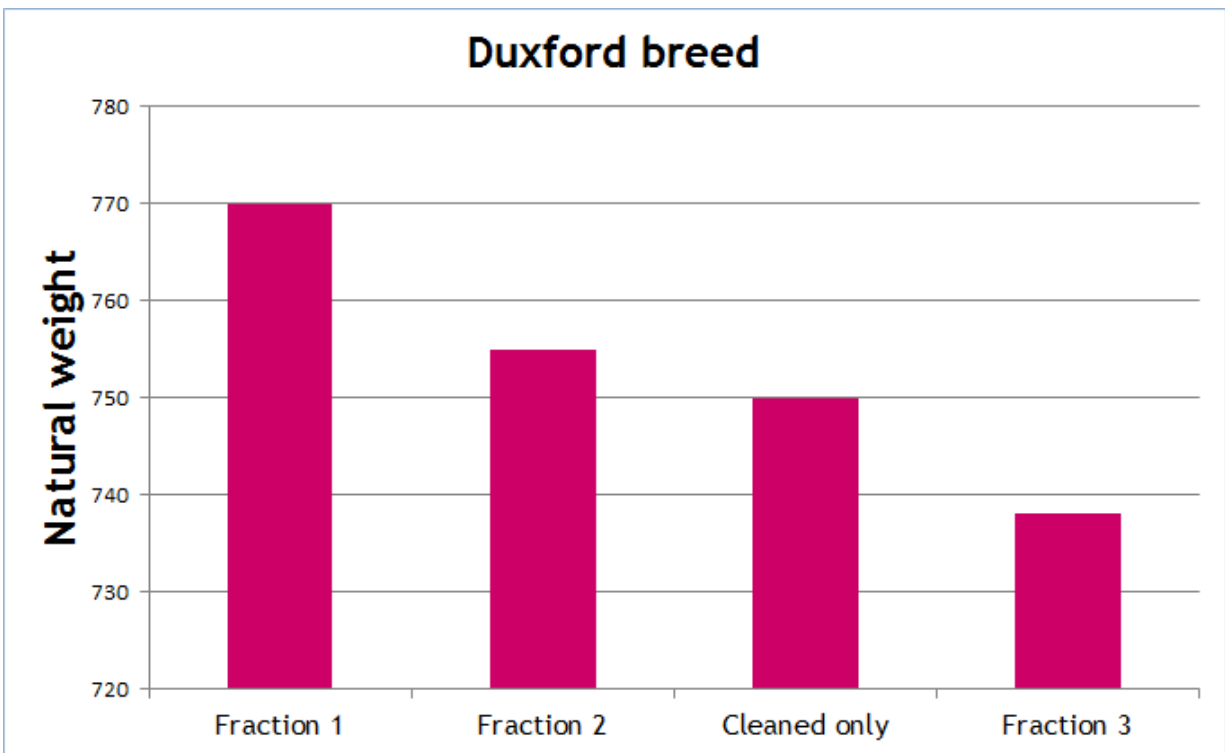
Horatio breed

Natural weight

| | Fraction 1 | Fraction 2 | Initial material | Fraction 3 |

Claire breed

Natural weight

| | Fraction 1 | Fraction 2 | Initial material | Fraction 3 |

Gravitas breed

Stigg breed

Table 4

Oakley breed

	Fraction 1	Fraction 2	Cleaned only	Fraction 3
Natural weight	791	784	765	751

Duxford breed

	Fraction 1	Fraction 2	Cleaned only	Fraction 3
Natural weight	770	755	750	738

Gallant breed

Invicta breed

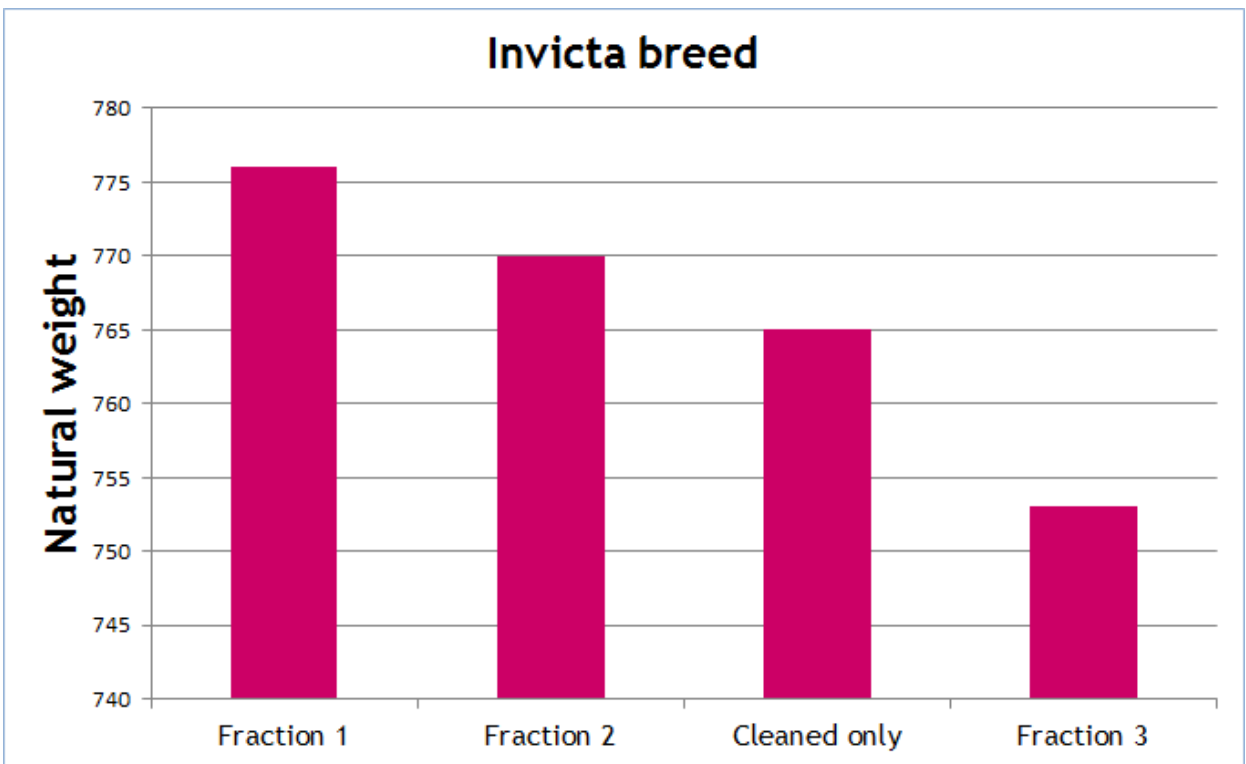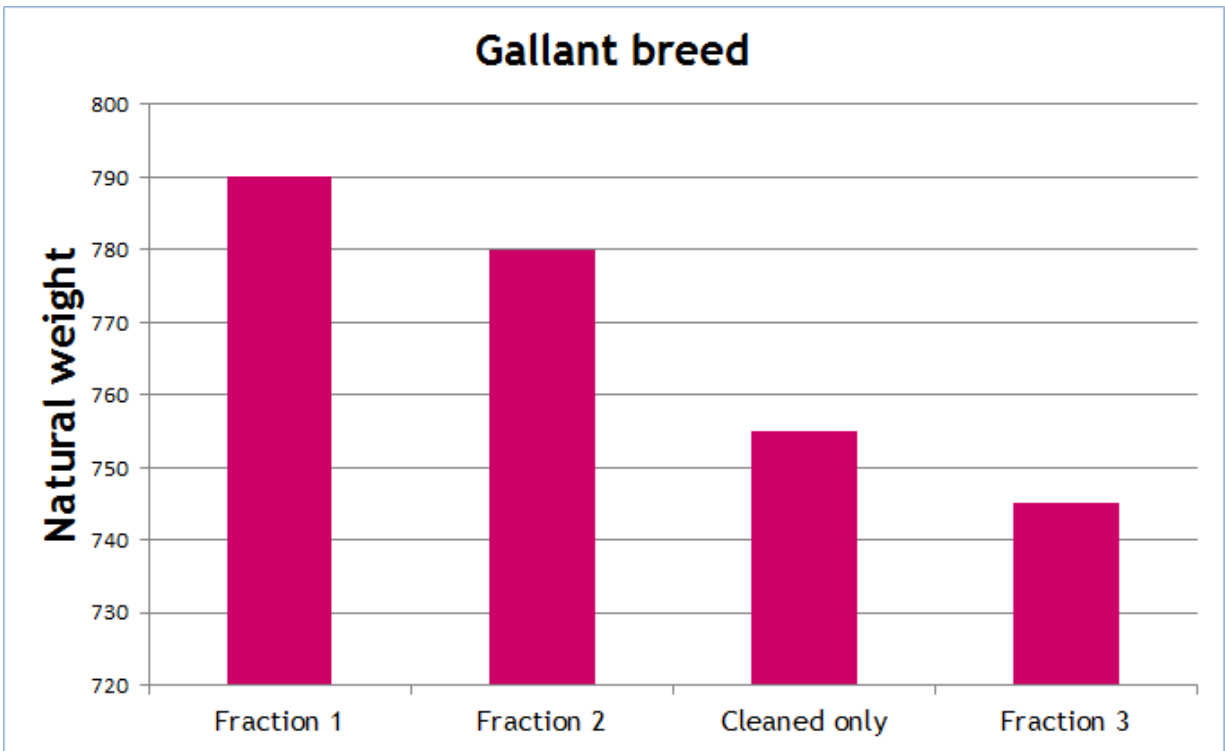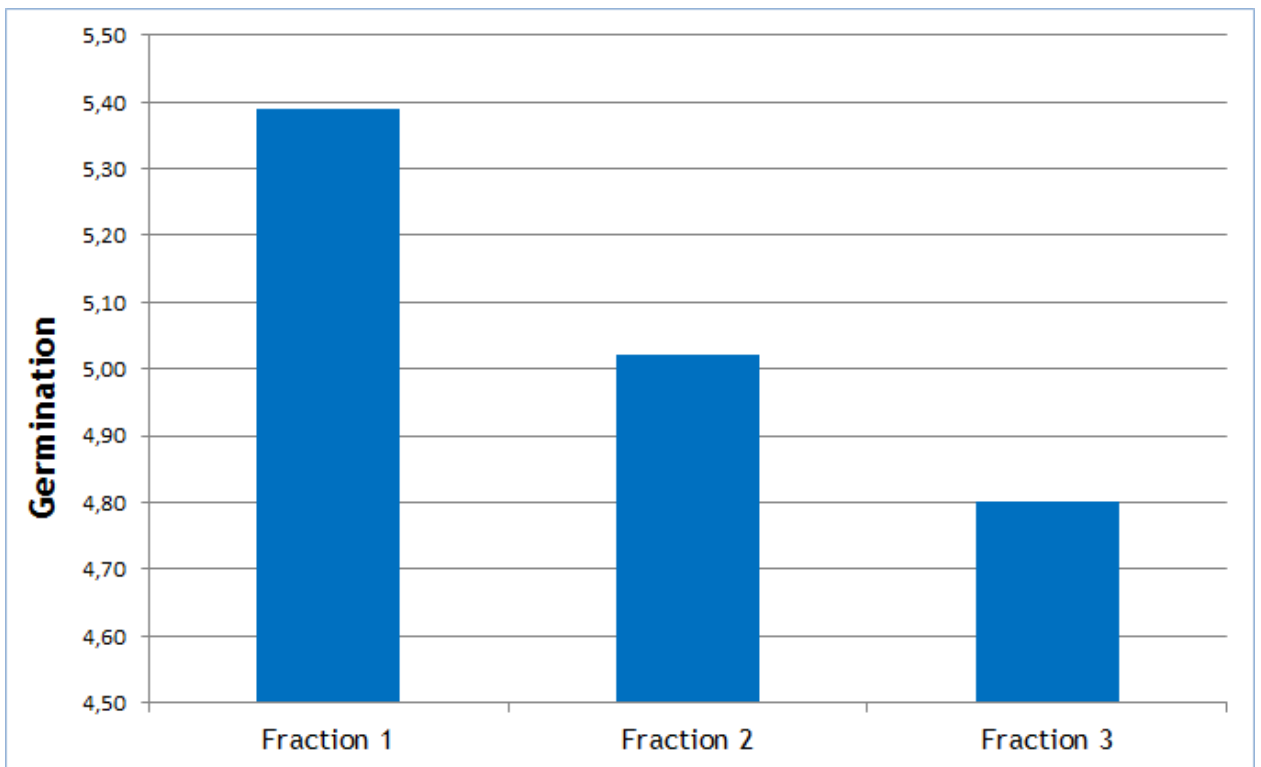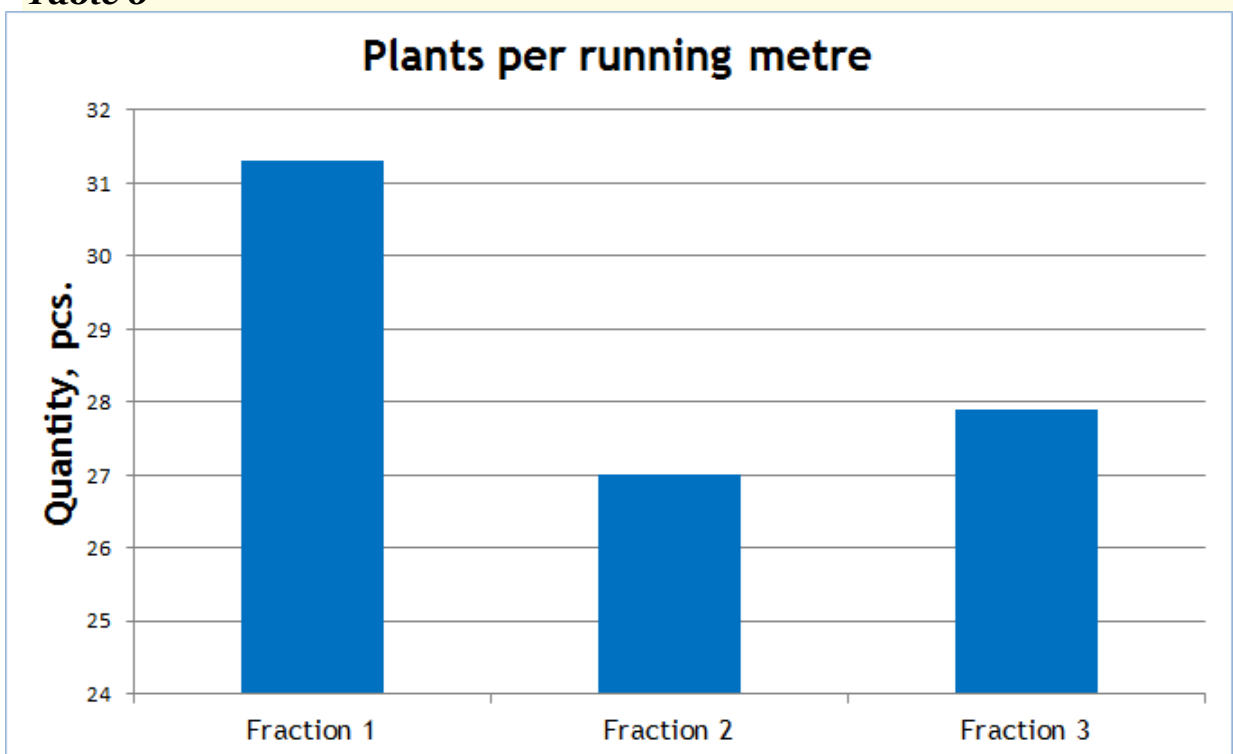Winter wheat was sown in field trials in Lincolnshire to study germination. Ten samples were taken and the following histograms were constructed on the average rate. (see Table 5):

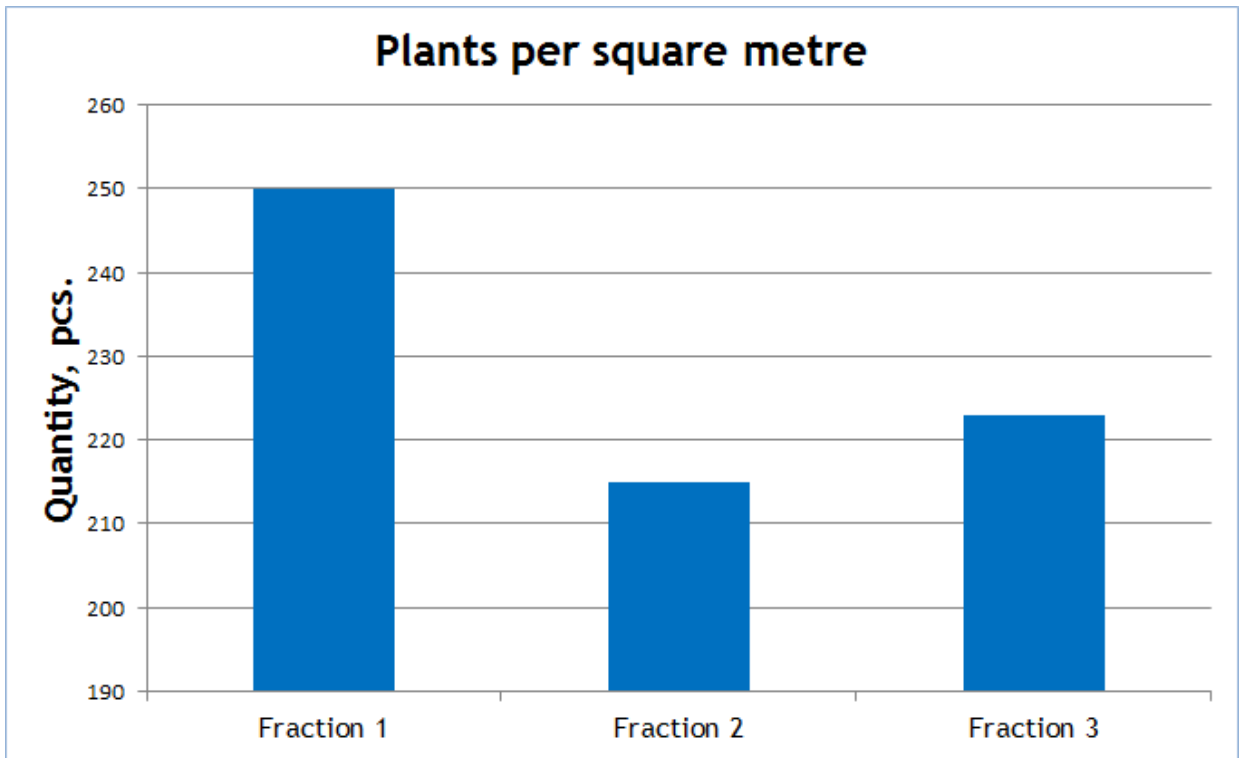*Table 5*

As a result researches showed an increase in the **density of planting** up to 13% (see Table 6).

Table 6

Plants per square metre

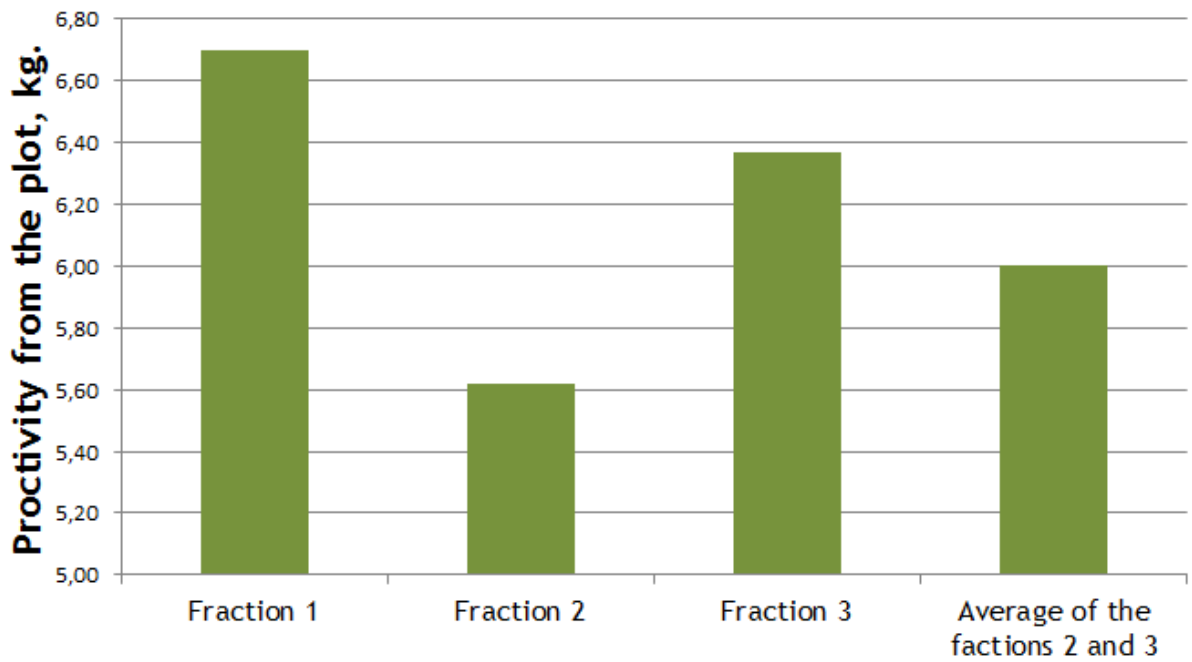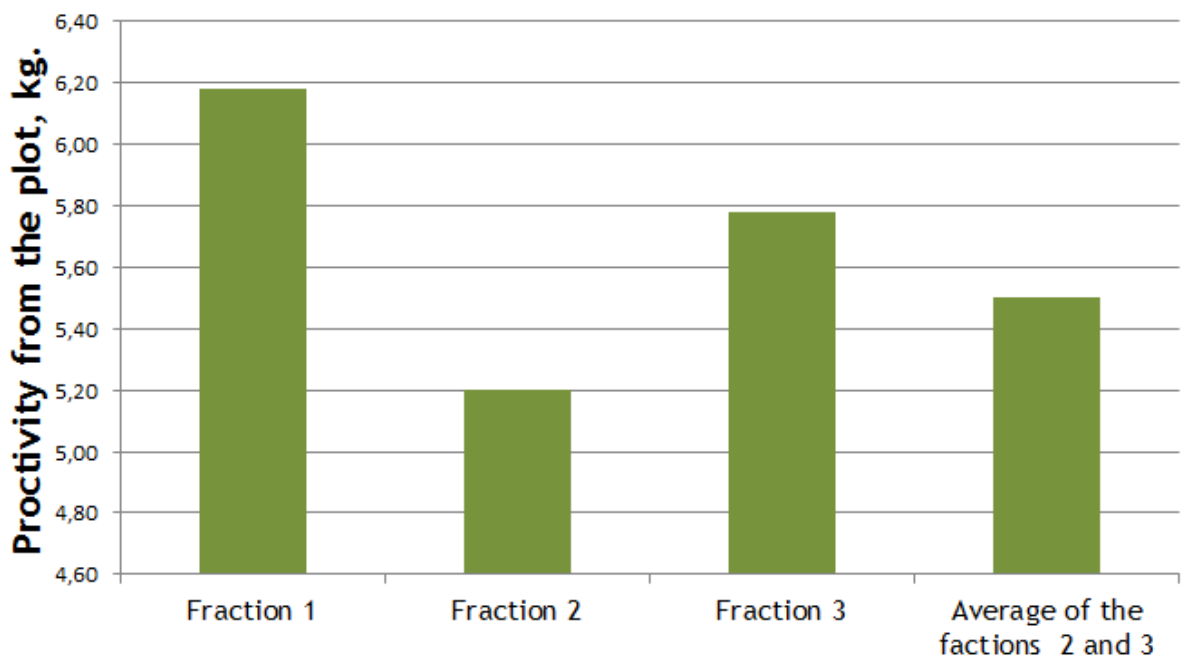The four field trials in Lincolnshire and Suffolk, in the UK, were held in well-prepared soil, precipitation was consistent with the year of drought.

Table 7

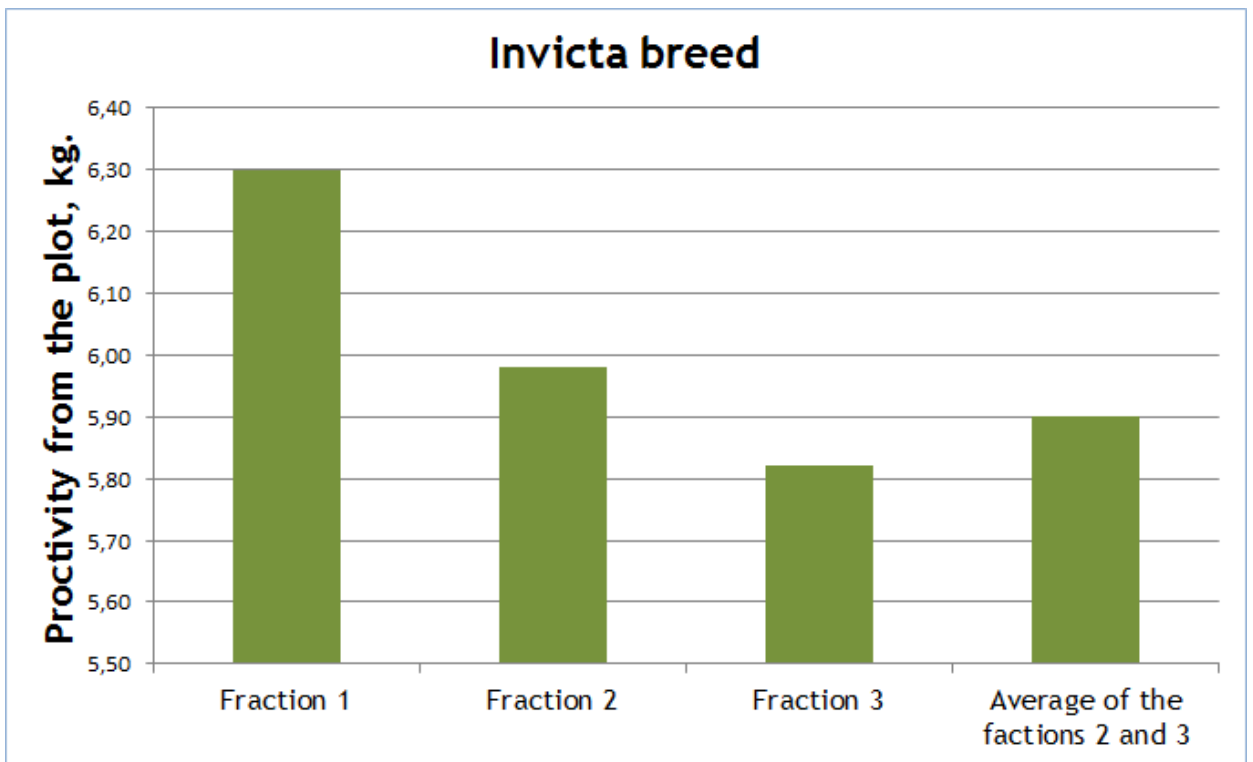**Panorama breed**

Proctivity from the plot, kg.

| | Fraction 1 | Fraction 2 | Fraction 3 | Average of the factions 2 and 3 |

Stigg breed

Proctivity from the plot, kg.

| | Fraction 1 | Fraction 2 | Fraction 3 | Average of the factions 2 and 3 |

Invicta breed

Proctivity from the plot, kg.

|	Fraction 1	Fraction 2	Fraction 3	Average of the factions 2 and 3
Value	6.30	5.98	5.82	5.90

In Suffolk 1 fractions of three winter wheat varieties (Stigg, Panorama, Invicta) gave crop increase by 12% more than all the rest (see Table 7).

Table 8 - comparative characteristics of productivity of 1 seed fraction separated on CAD machine and seeds conventionally cleaned according to UK standards.

Stigg breed

Productivity

	Fraction 1	Conventionally cleaned 1, 2 and 3
Value	6.13	5.70

Panorama breed

Invicta breed
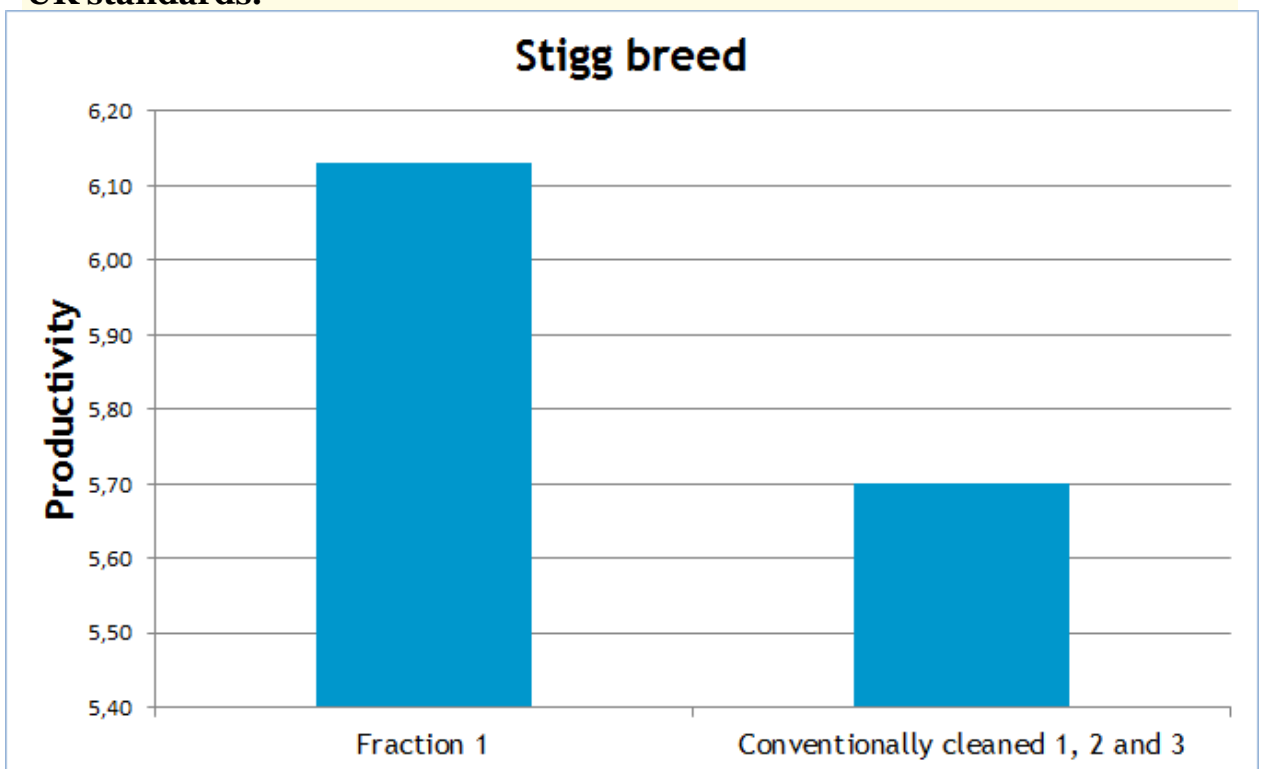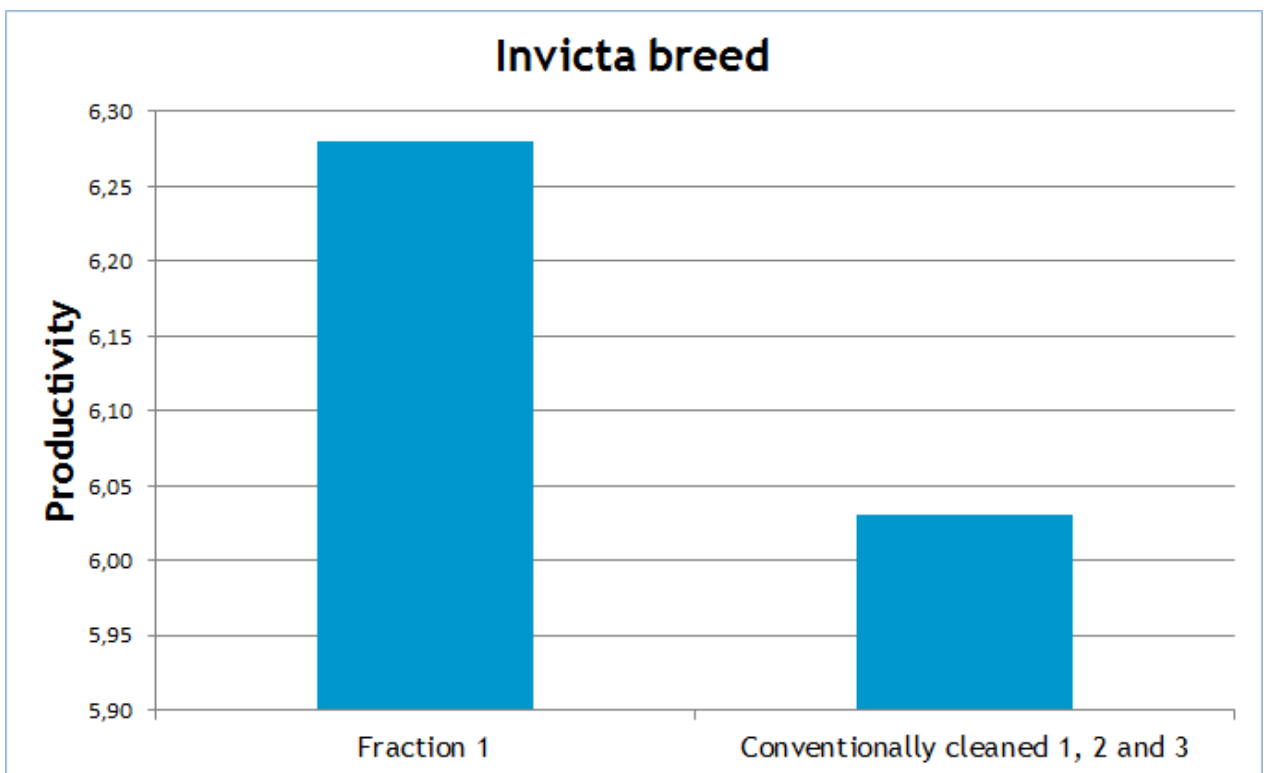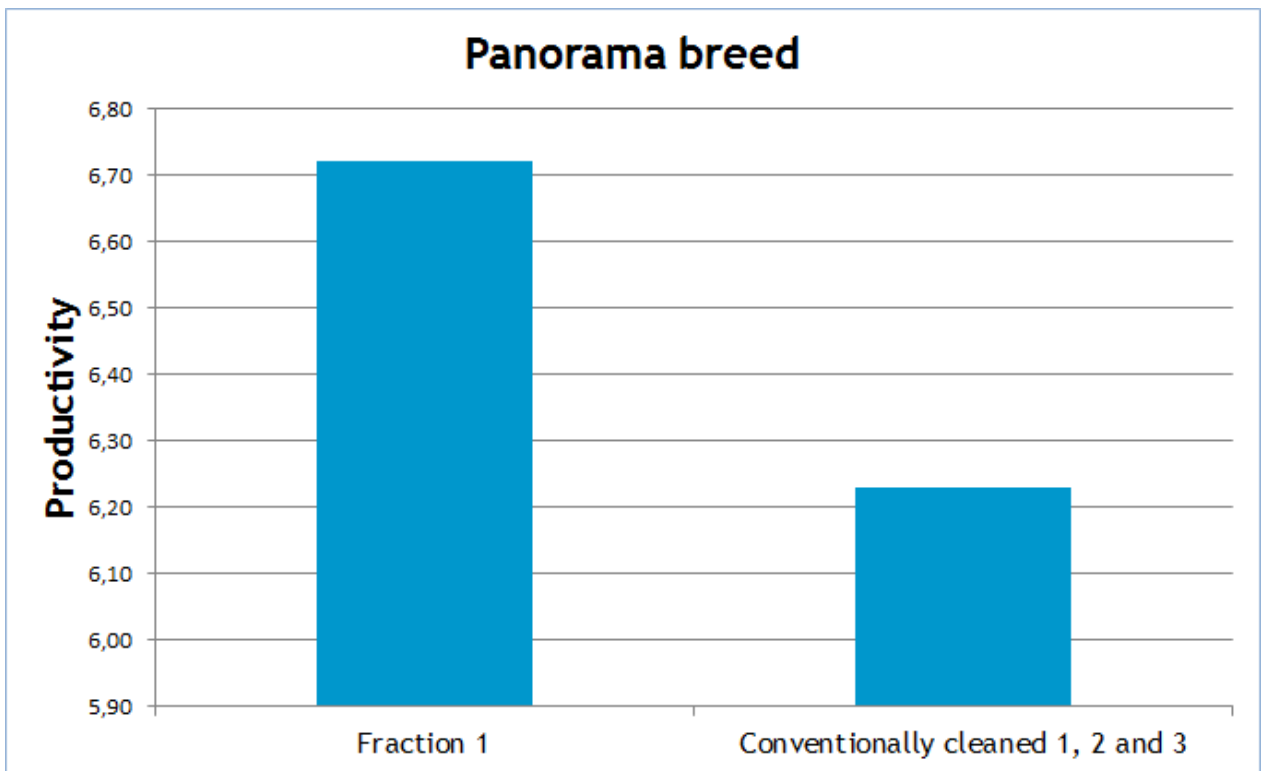
Also there was carried out comparing the yield of seeds that have been conventionally cleaned according to UK standards with seeds that were prepared with CAD separator. Productivity of seeds that were prepared with CAD separator showed an increase by 7,3% (see Table 8).

Table 9 - **Improvement of Hagbert after separation with CAD machine.**
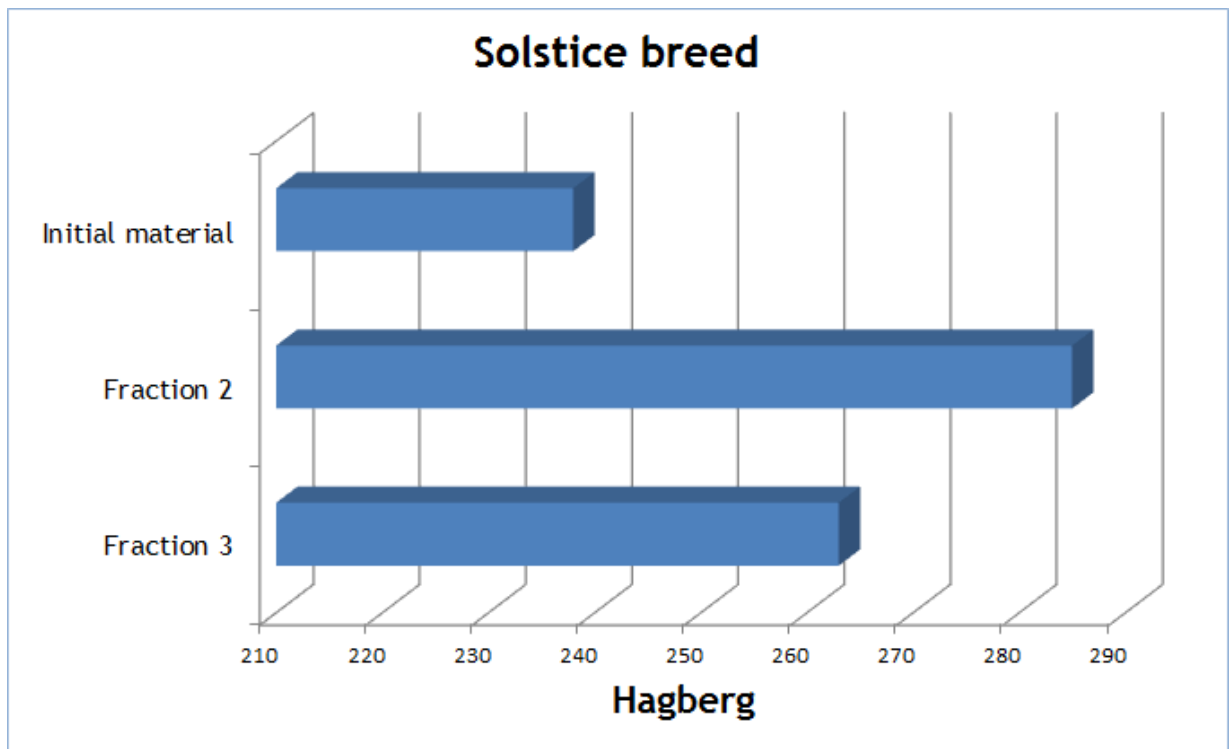
With the help of CAD separator managed to significantly improve **Hagberg**. (see Table 9).

CONCLUSIONS:

Research conducted in the UK in 2010/11 showed:

- grain selection according to the specific weight with CAD separator improved germination and the density of planting, that gave crop increase by 12%;

- seeds with higher specific weight gave stronger plants that were resistant to adverse conditions, in particular to drought;

- conducted research has shown increase in the yield of seeds that were prepared with CAD separator by 7,3 % comparing to seeds that has been conventionally cleaned according to UK standards;

- CAD separator also allowed to improve the baking quality of grain, as it was possible to improve Hagberg.