Fishery Technology, VIII [1] :104, 1971

CONTROL OF DRAINED WEIGHTS IN FROZEN PRAWNS

It is well known that frozen fishery products suffer weight loss due to 'drip' during the thawing process. It is the general practice in prawn freezing factories to add more quantity of the material to the block at the pre-freezing stage to compensate for these losses and to ensure that the declared drained weight is obtained on thawing. The excess quantity of material thus added is so arbitrary that it mostly results in excess drained weight of the block. The control of drained weights of these blocks during production is handicapped due to the destructive nature of the procedure involved and the time consumed for the determination of the drained weights. In canned prawns it was noticed that significant correlations existed between gross weight, drained weight and volume of brine which could be of help in controlling their drained weights by adopting Statistical Quality Control charts for gross weights during production (Rao *et al*, 1969). In frozen prawns also similar correlations are observed among the different variables which are of interest in controlling drained weights through adoption of SQC charts for grose weights, which does not involve destruction of the product. The present note deals with this aspect of frozen prawns. Details of preparation of SQC charts are given by Kramer and Twigg (1962).

Observations recorded in the pre-shipment inspections of frozen prawns were utilized in this analysis. The observations pertain to gross weight and drained weight of frozen blocks, recorded in kilograms correct to two decimal places. The data were spread over different size-grades and factories combined together from several inspections. Headless shell-on and peeled and deveined prawns, two of the most important types of pack of frozen prawns, were considered separately.

Table I gives the values of the correlation coefficients in each case. The correlations between X and Y, and X and Z are positive, while that between Y and Z is negative (X: gross weight of the block, Y: corresponding drained weight and Z=X—Y). All these correlations are highly significant (level of significance less than 1%).

TABLE I CORRELATION COEFFICIENTS

Factors	*DF*	*Cor. Coeff.*	*Significance*
i) *Headless shell on prawns,*			
XY	202	0.240	<1% level
XZ	,,	— 0 267	<1% level
ZX	,,	0.872	<1% level
ii) *Peeled and deveined prawns.*			
XY	248	0.550	<1% level
YZ	,,	— 0 245	<1% level
ZX	,,	0 675	<1% level

X : Gross weight.
Y : Drained weight.
Z : Difference between the gross and drained weights.

The positive correlation between X and Z shows that the more the gross weight of the frozen block, the more is the difference between the gross weight and drained weight to be obtained on thawing of the block. Since YZ is negative, the greater such difference, the less will be the drained weight (All these correlations are inter-related but are dealt with here separately to understand the process clearly). Further XY is positive indicating that any inconsistency in gross weight will be an indication of erratic drained weight though not in the same proportion.

The significance of the above correlations points out that gross weight of a frozen block can be considered as a correlated factor to indicate significant variations in drained weight. Any change in processing variables which, if not rectified in time may lead to erratic

drained weights ultimately, can be expected to reflect in these gross weights. Control charts for gross weights will be immensely useful in tracing such variations.

The author is thankful to Dr. V. K. Pillai, Director, Central Institute of Fisheries Technology Ernakulam, for the interest he has taken in this work and to Sarvashri Cyriac Mathen and T. K. Govindan of CIFT for their helpful criticism.

Central Institute of Fisheries Technology, Ernakulam, Cochin-11.

K. KRISHNA RAO

REFERENCES

Kramer, A., and Twigg, B. A. 1962. *'Fundamentals of Quality control for the Food Industry'* (The AVI publishing company, Connecticut).

Rao, K. Krishna, Nair, R. Gopalakrishnan and Pillai, V. K. 1969. ISQC Bulletin, XII (**3 and 4**) 54-55,