Tipi di campionamento

- **A due classi**
- A tre classi

Campionamento a due classi

- I campioni sono classificati come ACCETTABILI o NON CONFORMI.
- In rapporto a dei **limiti** oppure a **presenza/assenza**

Definizioni del campionamento a due classi

- **n**: numero di campioni da saggiare;
- **m**: valore **limite** (non compare nei test P/A)
- **c**: numero massimo di campioni il cui valore può superare m.

Se aumenta n, aumenta la severità del campionamento

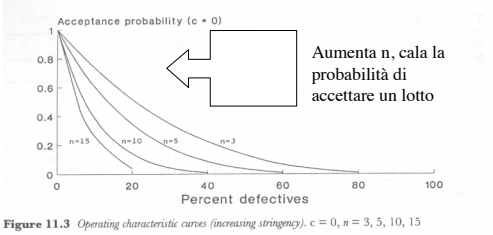

Figure 11.3 *Operating characteristic curves (increasing stringency).* c = 0, *n* = 3, 5, 10, 15

Se c aumenta, il campionamento è meno severo

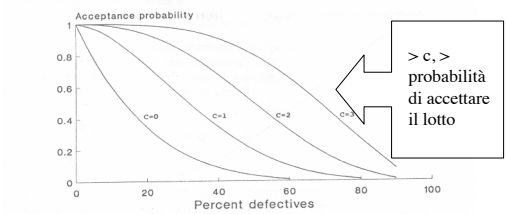

Figure 11.4 *Operating characteristic curves (decreasing stringency).* n = 5, c = 0, 1, 2, 3

Curva ideale

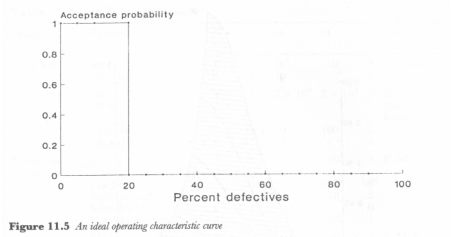

Figure 11.5 *An ideal operating characteristic curve*

Rischi del produttore e del consumatore

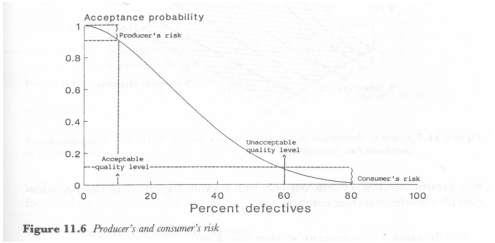

Figure 11.6 *Producer's and consumer's risk*

Tipi di campionamento

- A due classi
- **A tre classi**

Campionamento a tre classi

- Il campionamento a 2 classi suddivide i campioni in accettabili e non accettabili; quello a tre classi introduce la categoria del campione **marginalmente accettabili**.
- Non si può usare con P/A test, ma solo con conte microbiche

Definizioni del campionamento a tre classi

- **n**: numero di campioni da saggiare;
- **M**: se una sola conta supera questo valore l'intero lotto è scartato
- **m**: valore tra buona qualità e qualità marginale
- **c**: numero massimo di campioni che possono trovarsi tra m e M.

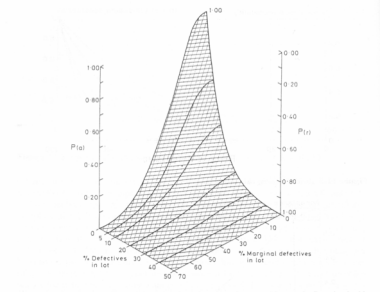

Figure 11.7 *Operating characteristic surface for a three-class plan.* n = 10, c = 2. *Reproduced with permission from Jarvis (1989)*

Valori suggeriti da ICMFS

Table 11.3 *ICMSF suggested sampling plans*

Degree of concern relative to utility and health hazard	*Conditions in which food is expected to be handled and consumed after sampling, in the usual course of events:**		
	Conditions reduce degree of concern	*Conditions cause no change in concern*	*Conditions may increase concern*
No direct health hazard Utility, e.g. shelf-life and spoilage	Increase shelf-life 3-class $n = 5$, $c = 3$	No change 3-class $n = 5$, $c = 2$	Reduce shelf-life 3-class $n = 5$, $c = 1$
Health hazard Low, indirect (indicator) Moderate, direct, limited spread *e.g. Staph. aureus* *C. perfringens*	Reduce hazard 3-class $n = 5$, $c = 3$ 3-class $n = 5$, $c = 2$	No change 3-class $n = 5$, $c = 2$ 3-class $n = 5$, $c = 1$	Increase hazard 3-class $n = 5$, $c = 1$ 3-class $n = 10$, $c = 1$
Moderate, direct, potentially extensive spread *e.g. Salmonella*	2-class $n = 5$, $c = 0$	2-class $n = 10$, $c = 0$	2-class $n = 20$, $c = 0$
Severe, direct *e.g. C. botulinum* *S. typhi*	2-class $n = 15$, $c = 0$	2-class $n = 30$, $c = 0$	2-class $n = 60$, $c = 0$

* More stringent sampling plans would generally be used for sensitive foods destined for susceptible populations.
Adapted from ICMSF (1986)

Carcassa

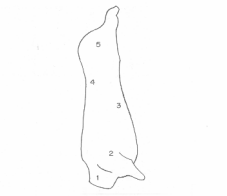

FIGURE 7.4. Heterogeneity of contamination of carcases as established in practice. 1, *Regio pharyngica*; 2, *R. eomobrachiatis*; 3, *R. xiphoidia*; 4, *R. lumbalis*; 5, *R. glutaea*. (Source: Catsaras *et al.*, 1974.)

Aliquote

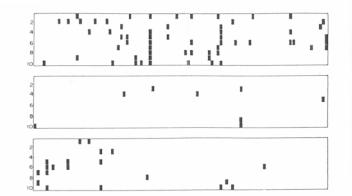

FIGURE 7.5. Analytical impact of the stratification of the distribution of microorganisms in three consignments of dried foods. Black squares represent aliquots found positive for a target organism had the total consignment been examined for that purpose; white areas were found negative for the target organism. (Source: van Schothorst *et al.*, 1966.)

Distribuzione casuale dei batteri

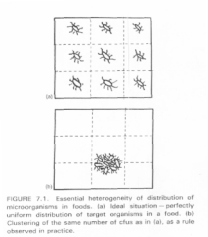

FIGURE 7.1. Essential heterogeneity of distribution of microorganisms in foods. (a) Ideal situation – perfectly uniform distribution of target organisms in a food. (b) Clustering of the same number of cfus as in (a), as a rule observed in practice.

Microscopio elettronico

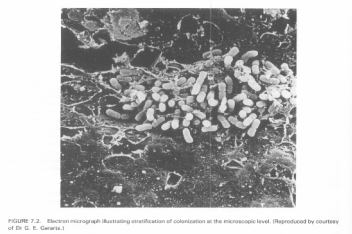

FIGURE 7.2. Electron micrograph illustrating stratification of colonization at the microscopic level. (Reproduced by courtesy of Dr G. E. Gerarts.)