FORMATIONS AUX STATISTIQUES : MANUEL DU FORMATEUR DE NIVEAU 1

Janvier 1991

SCÉNARIO 7

Tableaux de contingence

INRA

TRANSPARENTS

DÉPARTEMENT DE BIOMÉTRIE

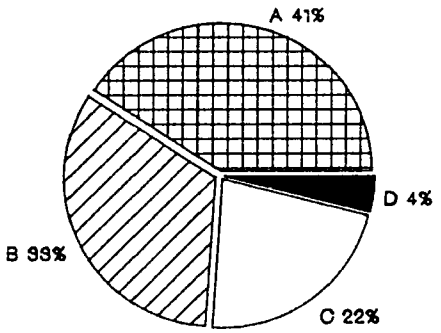
formation permanente fp

PRODUCTION D'AUTOMOBILES
ANNEE 1980

Type de véhicule	Effectif (en milliers de véhicules)	Pourcentage
Cabriolet 2 places	10,2	40,8
4 places	8,3	33,2
5places	5,5	22,0
Modèle luxe	1,0	4,0

PRODUCTION AUTOMOBILE 1980

Diagrammes

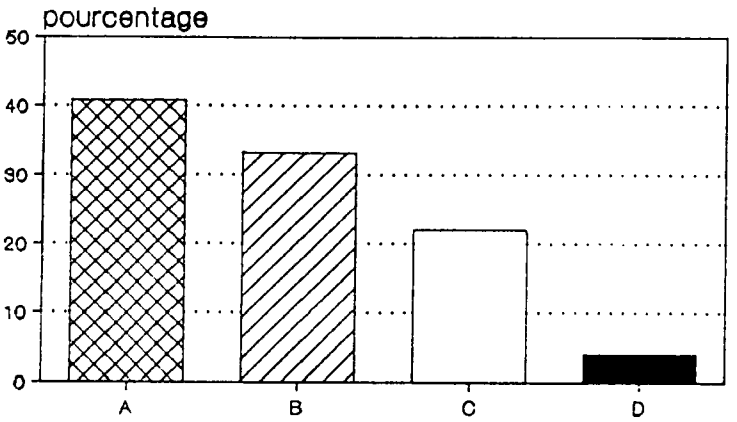


A = CABRIOLETS

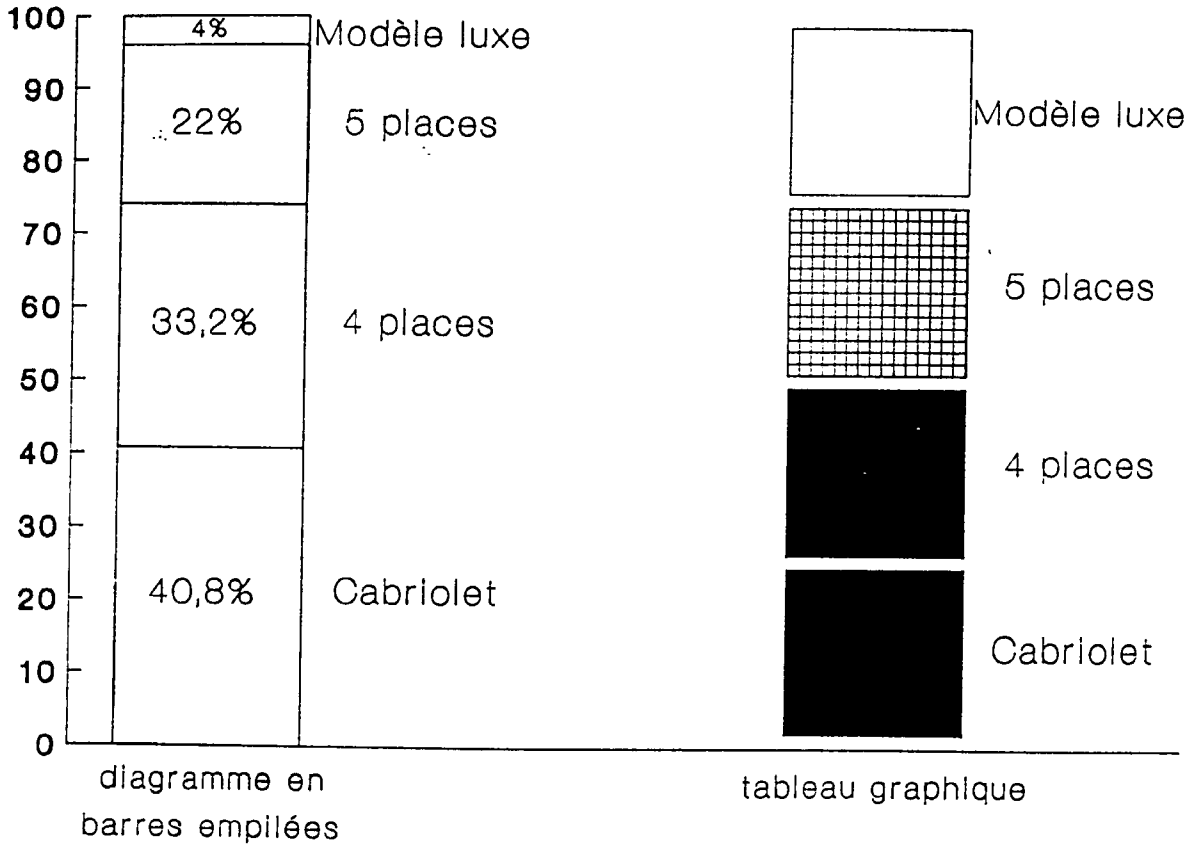
B = QUATRE PLACES

C = CINQ PLACES

D = LUXE



PRODUCTION D'AUTOMOBILES
ANNEE 1980



STAGIAIRES

Nombre de COUPLES par stagiaire	$n1$ $n2$ $n3$ . . . . . nk	Total = 100
F, A		
F, I		
F, S		
F, T		
H, A		
H, I		
H, S		
H, T		

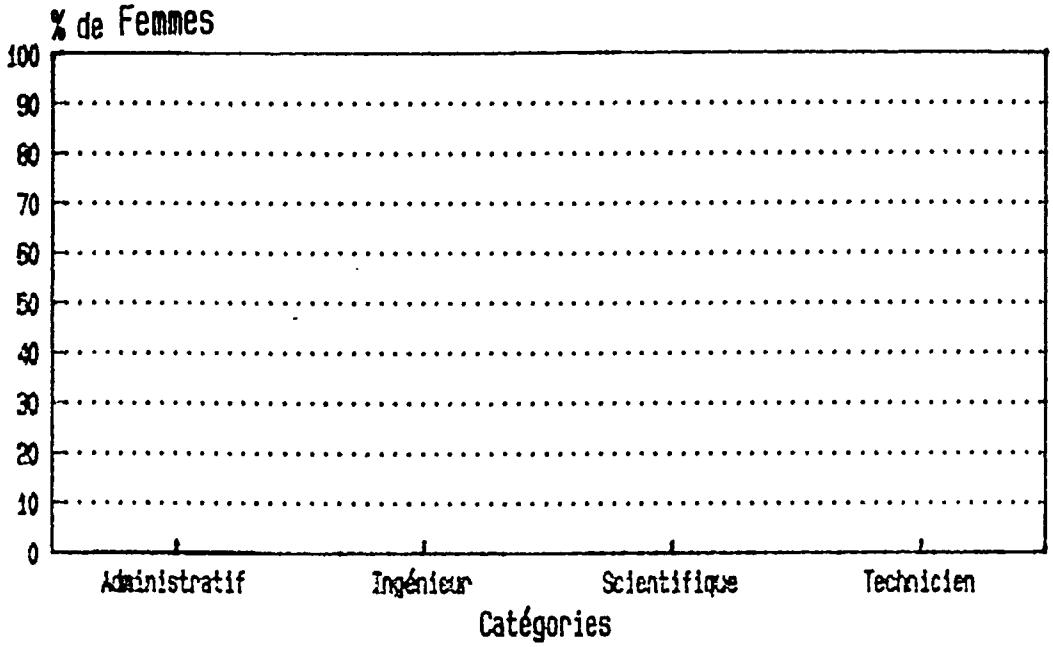
EFFECTIFS

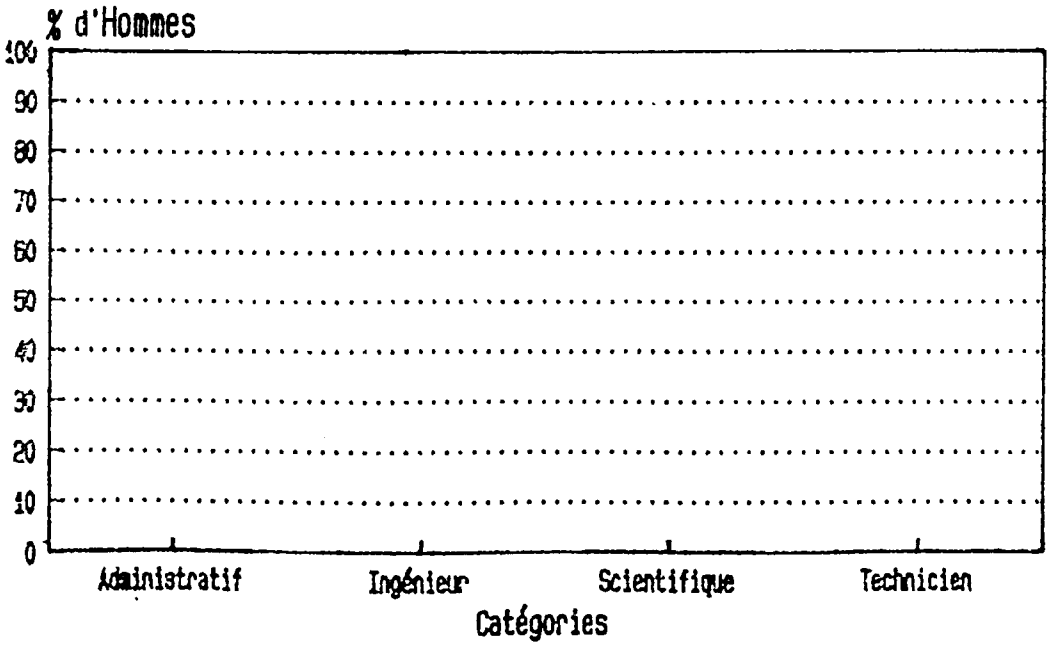
Cat. / Sexe	A	I	S	T	Total
F					
H					
Total					

PROFILS EN LIGNES

Cat. / Sexe	A	I	S	T	Total
F					100
H					100
Total					

PROFILS EN LIGNES

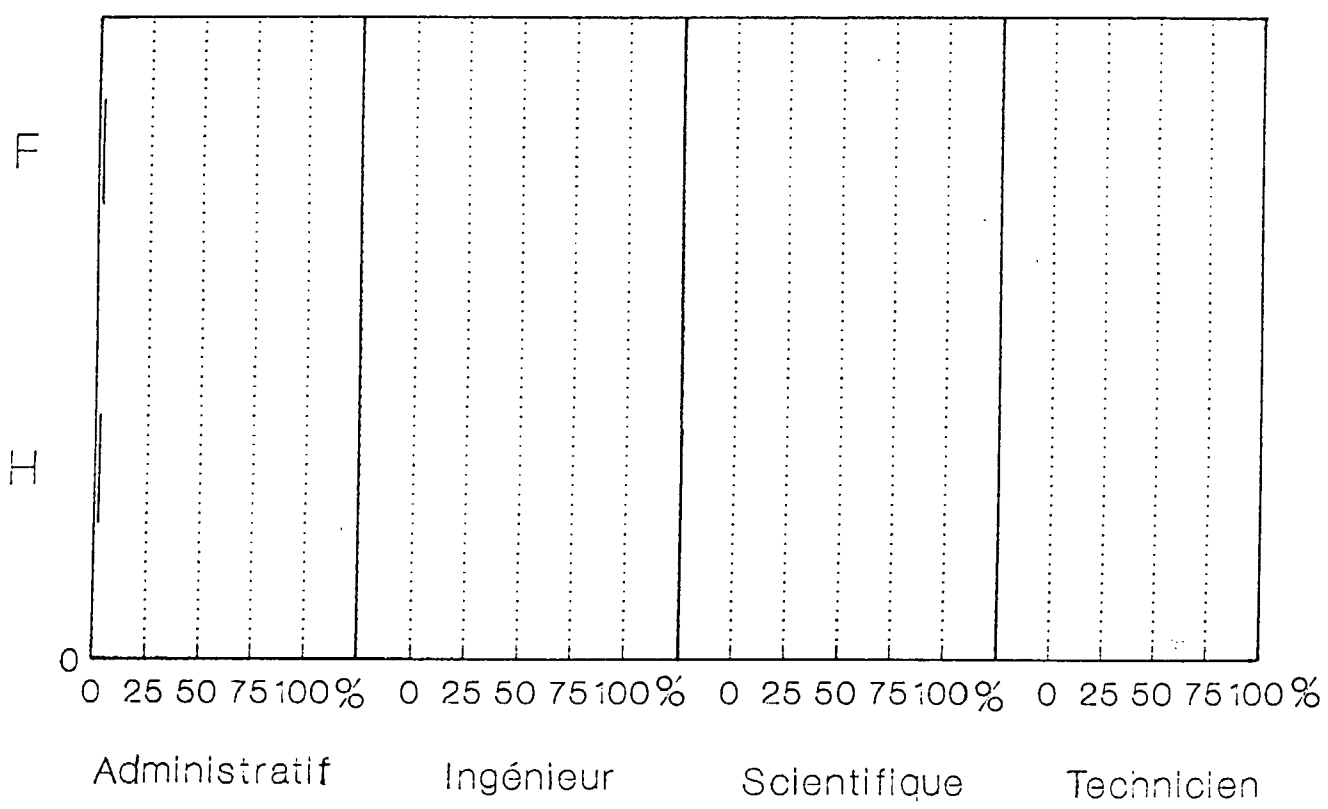




PROFILS EN COLONNES

Cat. / Sexe	A	I	S	T	Total
F					
H					
Total					

PROFILS EN COLONNES

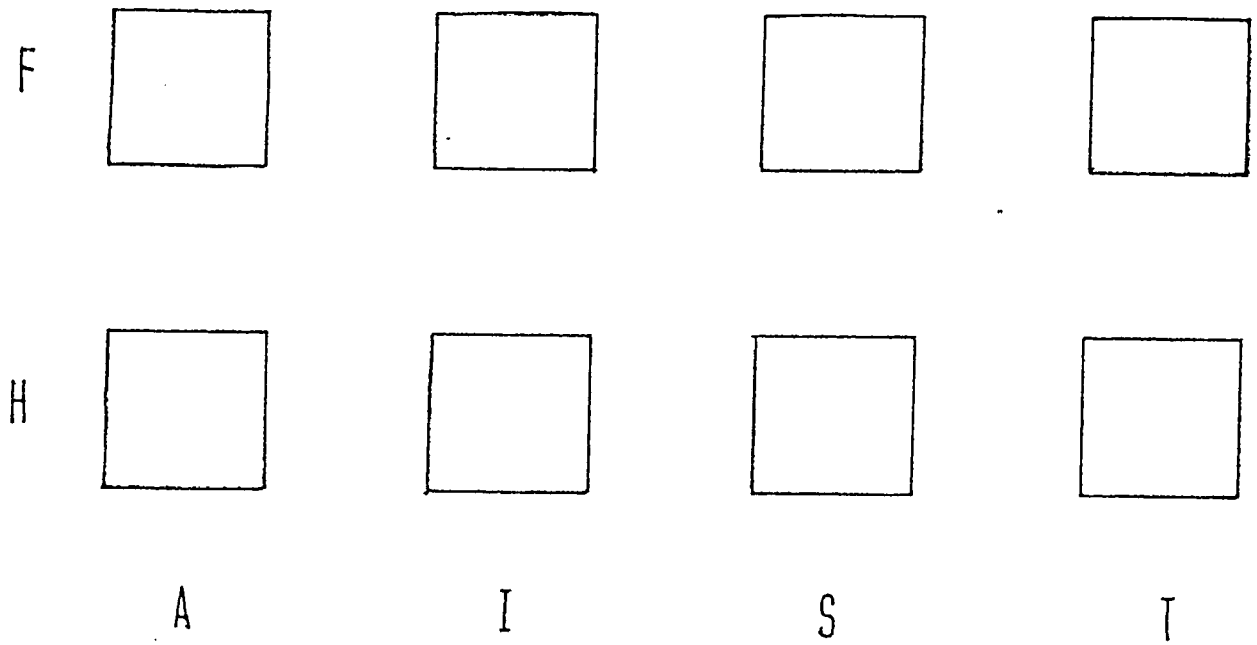


FRÉQUENCES RELATIVES

(fréquences $\times$ 100) = %

Sexe \ Cat.	A	I	S	T	Total
F					
H					
Total					100

SCHÉMATISATION DES FRÉQUENCES RELATIVES



EFFECTIFS AJUSTÉS

Cat. / Sexe	A	I	S	T	Total
F					
H					
Total					

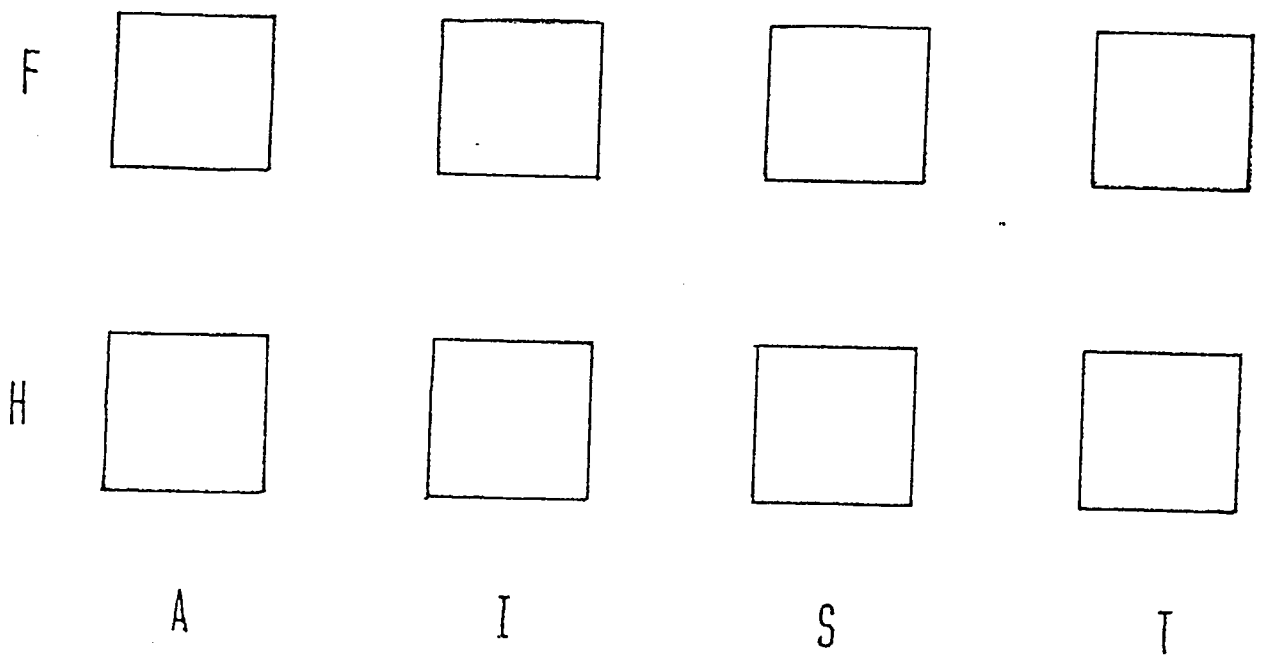
ÉCARTS A L'INDÉPENDANCE
NOMBRE OBSERVÉ - NOMBRE AJUSTÉ

Cat. / Sexe	A	I	S	T	Total
F					
H					
Total					

CONTRIBUTIONS AU KHI2

Sexe \ Cat.	A	I	S	T	Total
F					
H					
Total					

SCHÉMATISATION DES CONTRIBUTIONS AU CHI2



Test d'évaluation : Mortalité / Usage du tabac

Tableau des effectifs

	non fumeurs	fumeurs	
morts	117	54	171
vivants	950	348	1298
	1067	402	1469

Tableau des profils en lignes

	non fumeurs	fumeurs	
morts	68.42105	31.57895	100
vivants	73.18952	26.81048	100

Tableau des profils en colonnes

	non fumeurs	fumeurs
morts	10.96532	13.43284
vivants	89.03468	86.56716
	100.00000	100.00000

Tableau des fréquences relatives

	non fumeurs	fumeurs	
morts	7.964602	3.67597	11.64057
vivants	64.669843	23.68958	88.35943
	72.634445	27.36555	100.00000

Tableau des effectifs ajustés

	non fumeurs	fumeurs	
morts	124.2049	46.7951	171
vivants	942.7951	355.2049	1298
	1067.0000	402.0000	1469

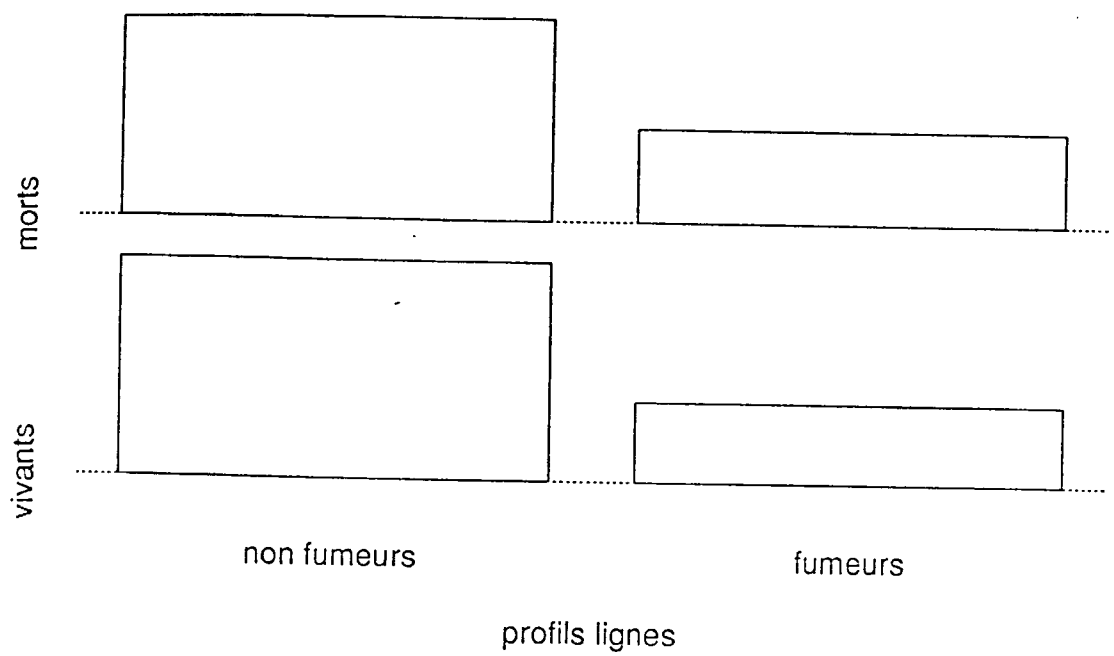
Tableau des contributions au khi2

	non fumeurs	fumeurs
morts	0.24180048	0.64179380
vivants	0.03185507	0.08455065

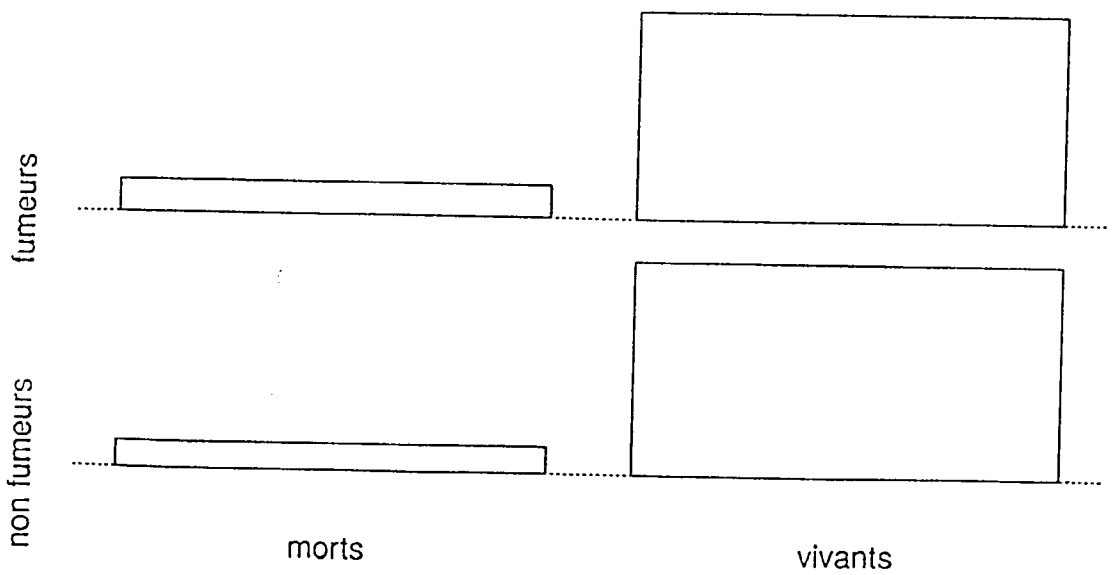
Valeur du khi2

1.723463

Tableaux des profils



profils lignes



profils colonnes

Tableau des frequences relatives

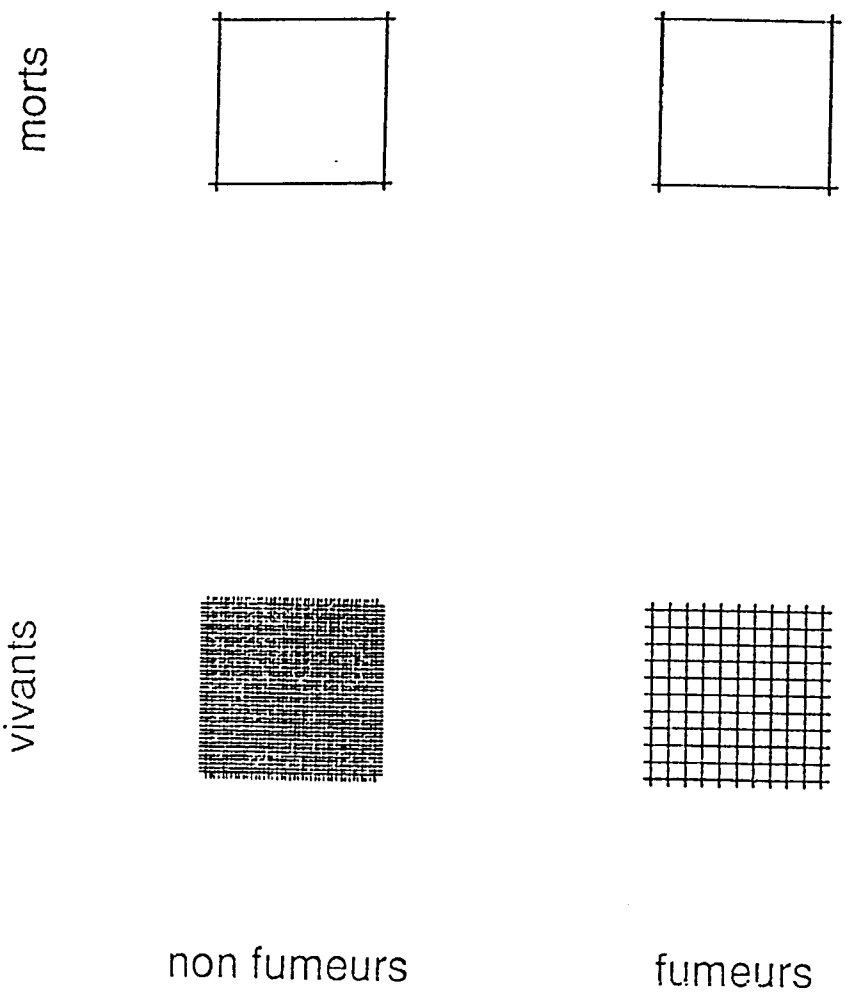
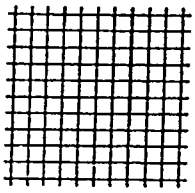
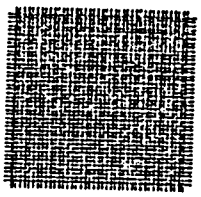


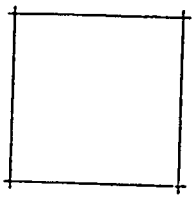
Tableau des contributions au khi2

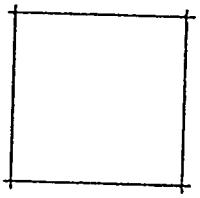
morts





vivants





non fumeurs

fumeurs

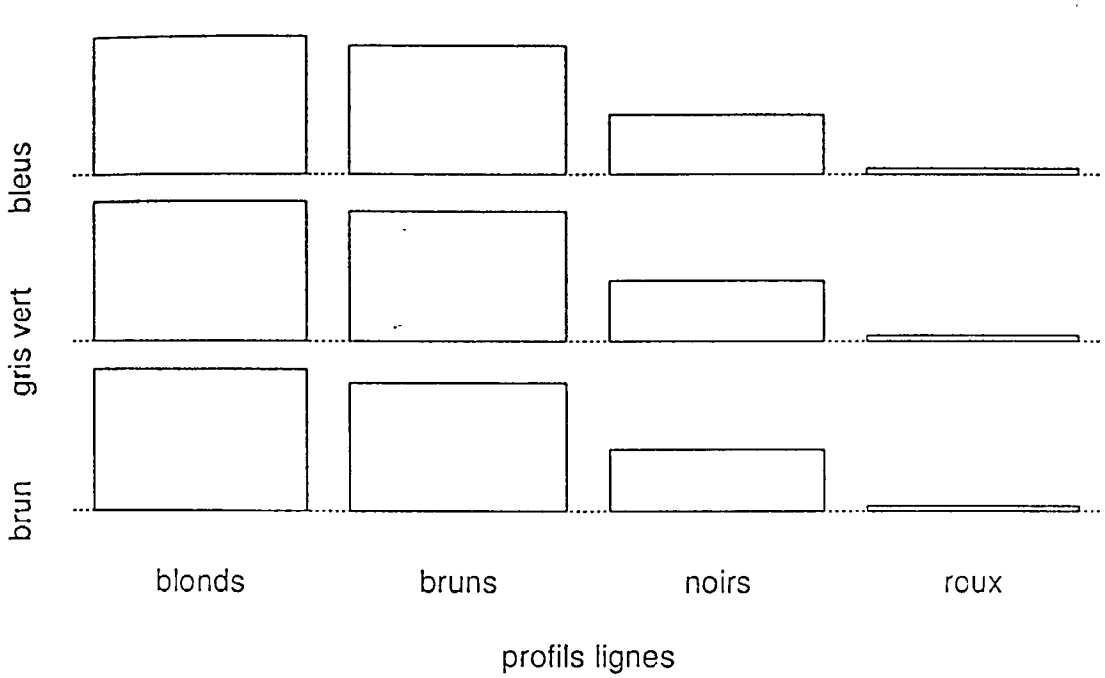
COULEUR DES YEUX / COULEUR DES CHEVEUX

(sur un échantillon de 6791 individus)

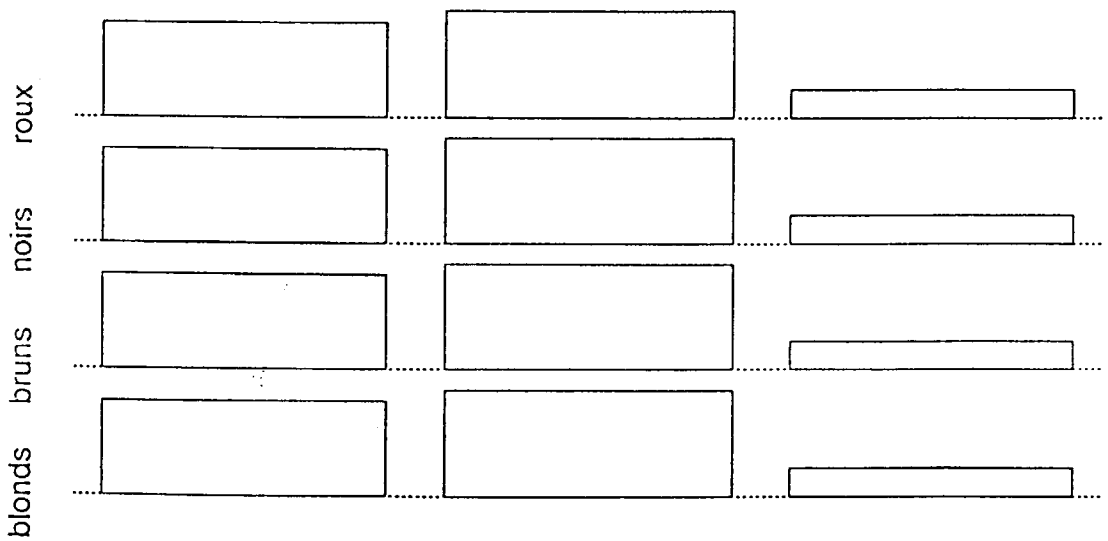
Tableau des effectifs

	blonds	bruns	noirs	roux	total
bleus	1169	1088	506	48	2811
gris verts	1303	1212	563	54	3132
bruns	357	323	154	14	848
total	2829	2623	1223	116	7691

Tableaux des profils



profils lignes



profils colonnes

Tableau des frequences relatives

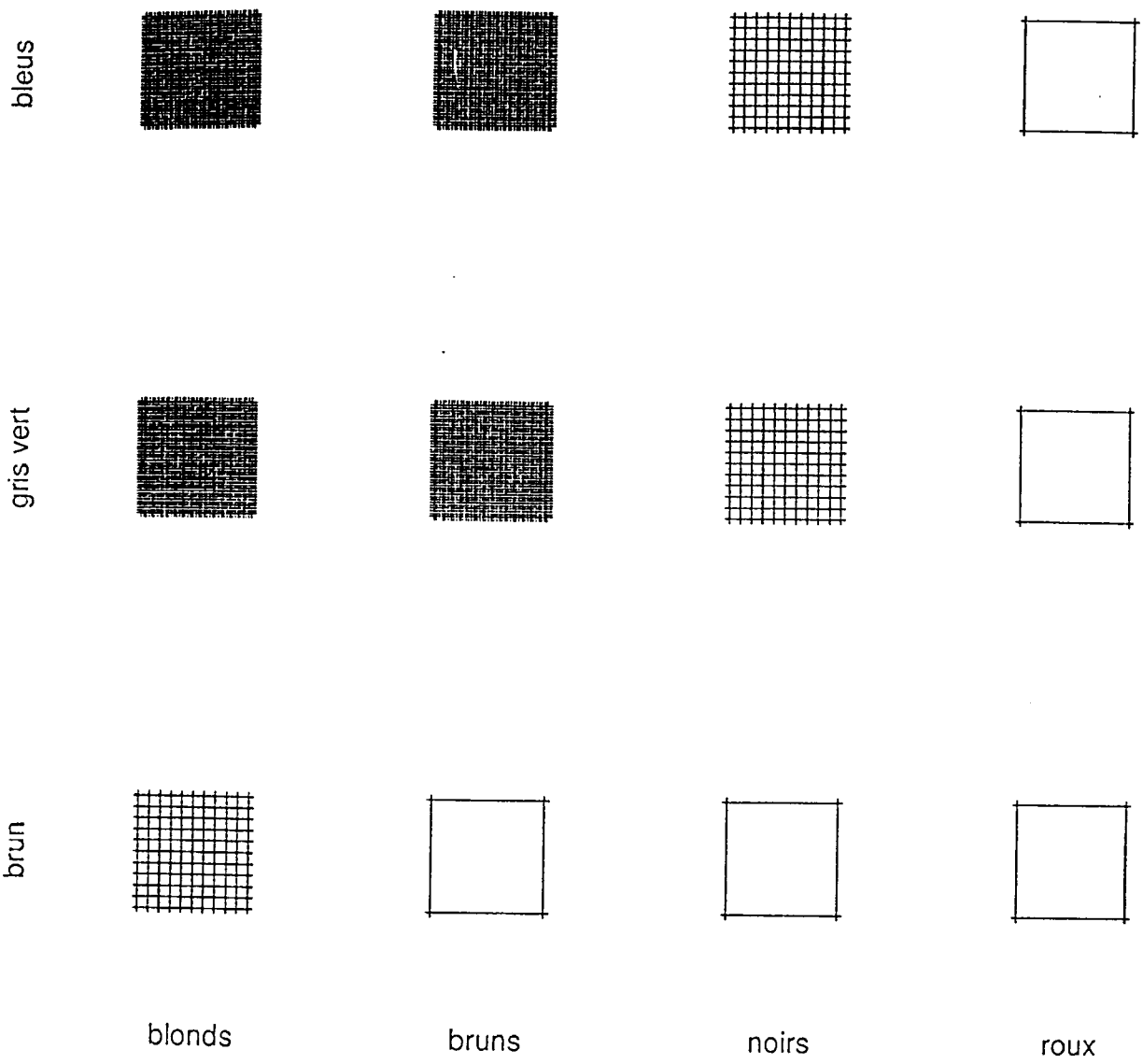
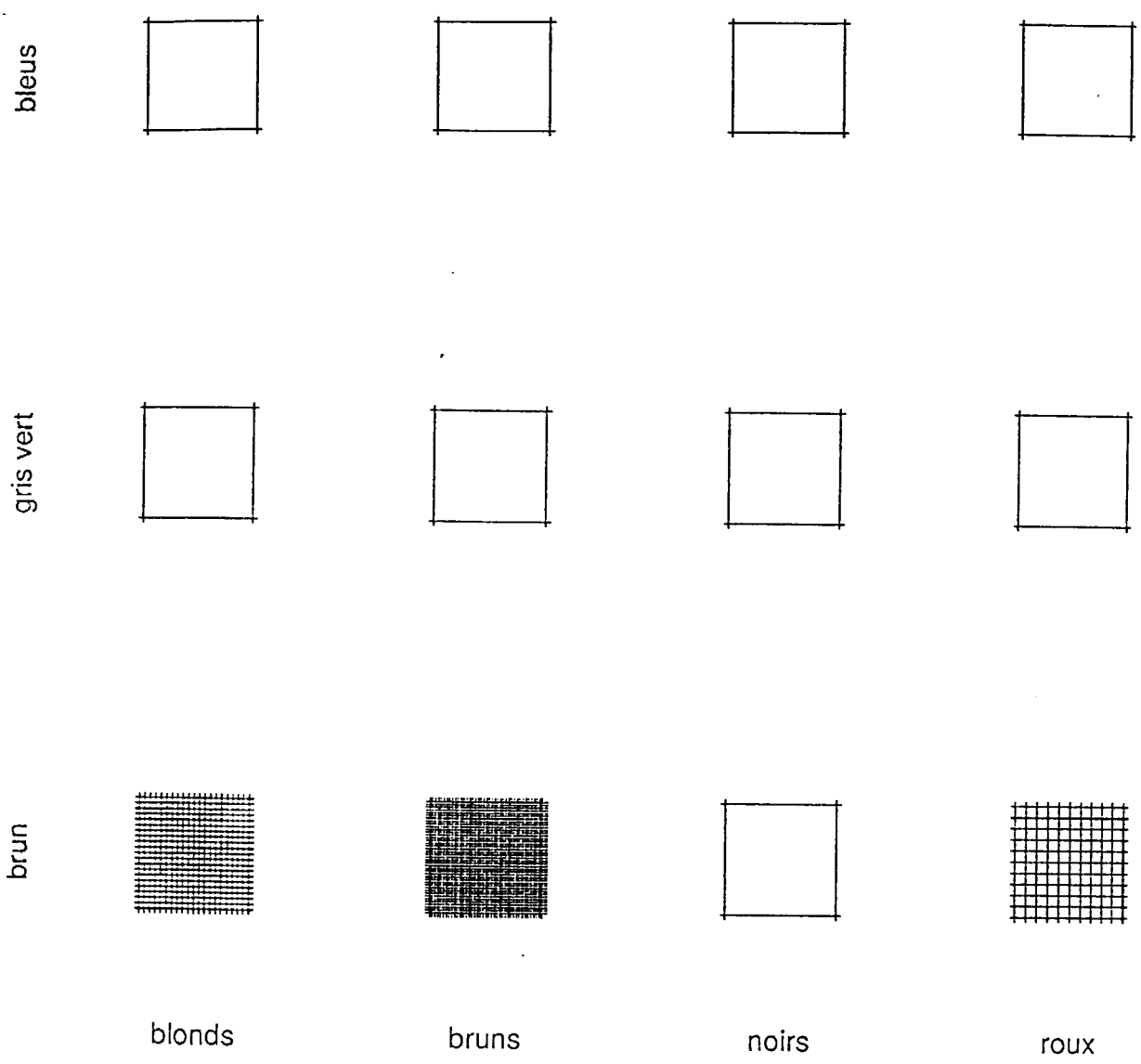


Tableau des contributions au khi2

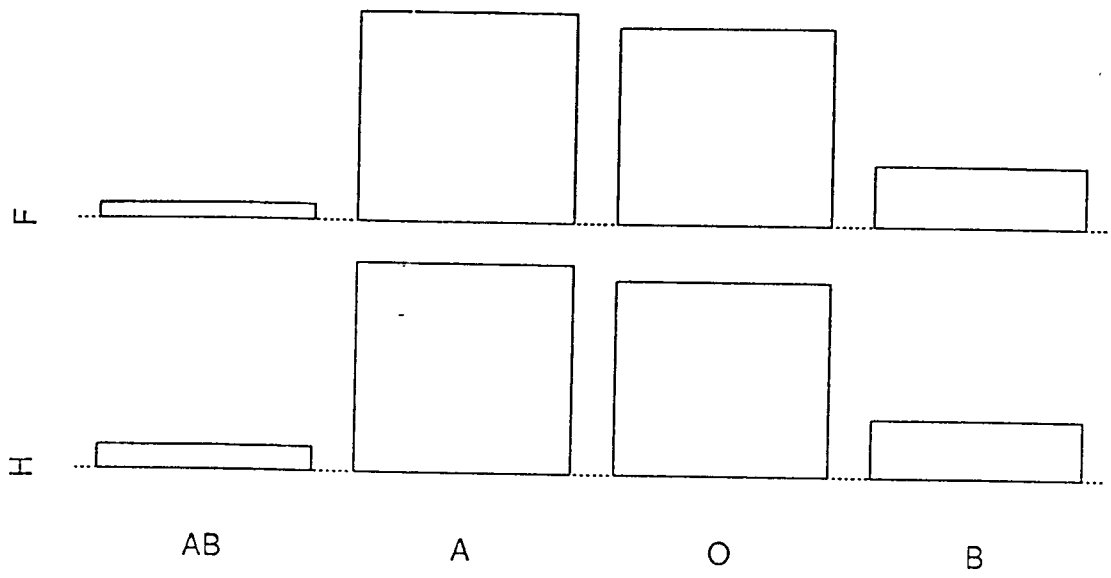


Sexe / Groupe sanguin
à partir d'un échantillon de 976 individus

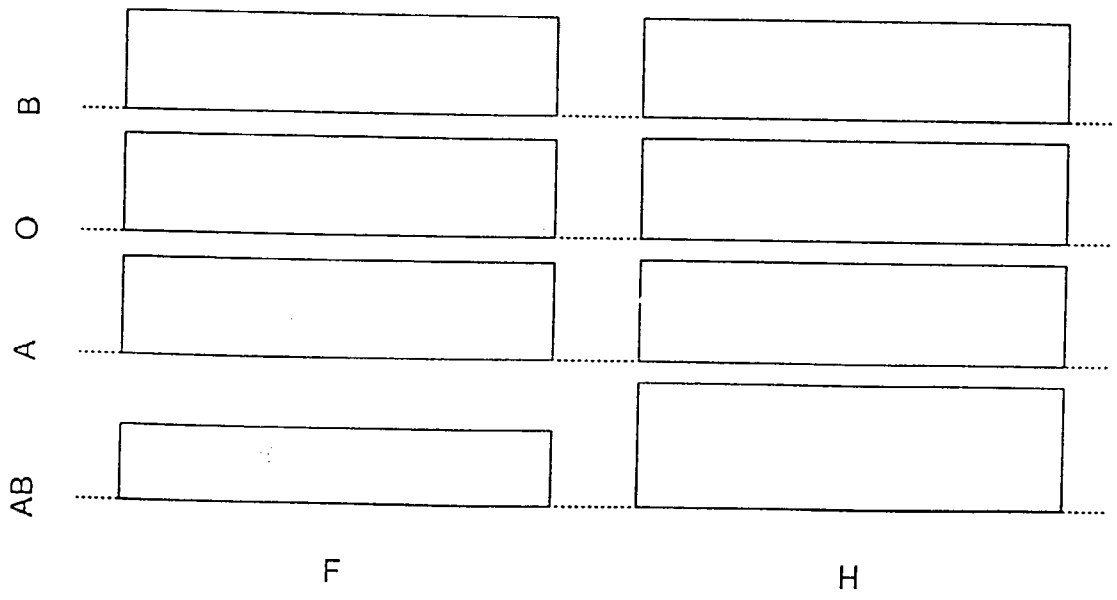
Tableau des effectifs

	AB	A	O	B	
F	15	207	194	60	476
H	25	215	200	60	500
	40	422	394	120	976

Tableaux des profils

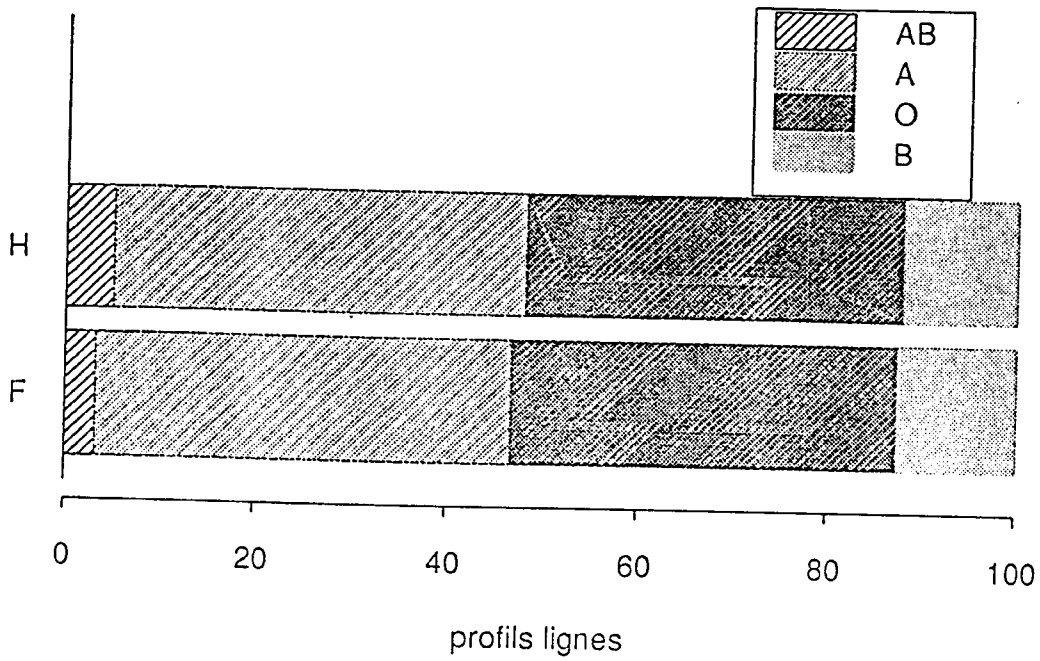


profils lignes



profils colonnes

Tableaux des profils



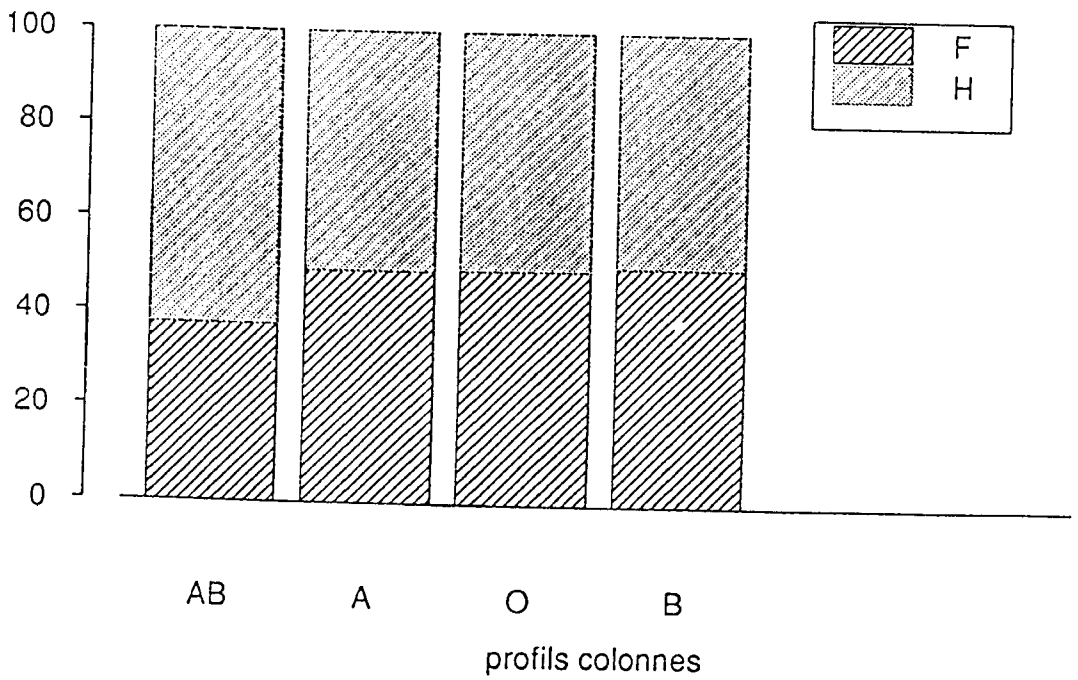


Tableau des frequences relatives

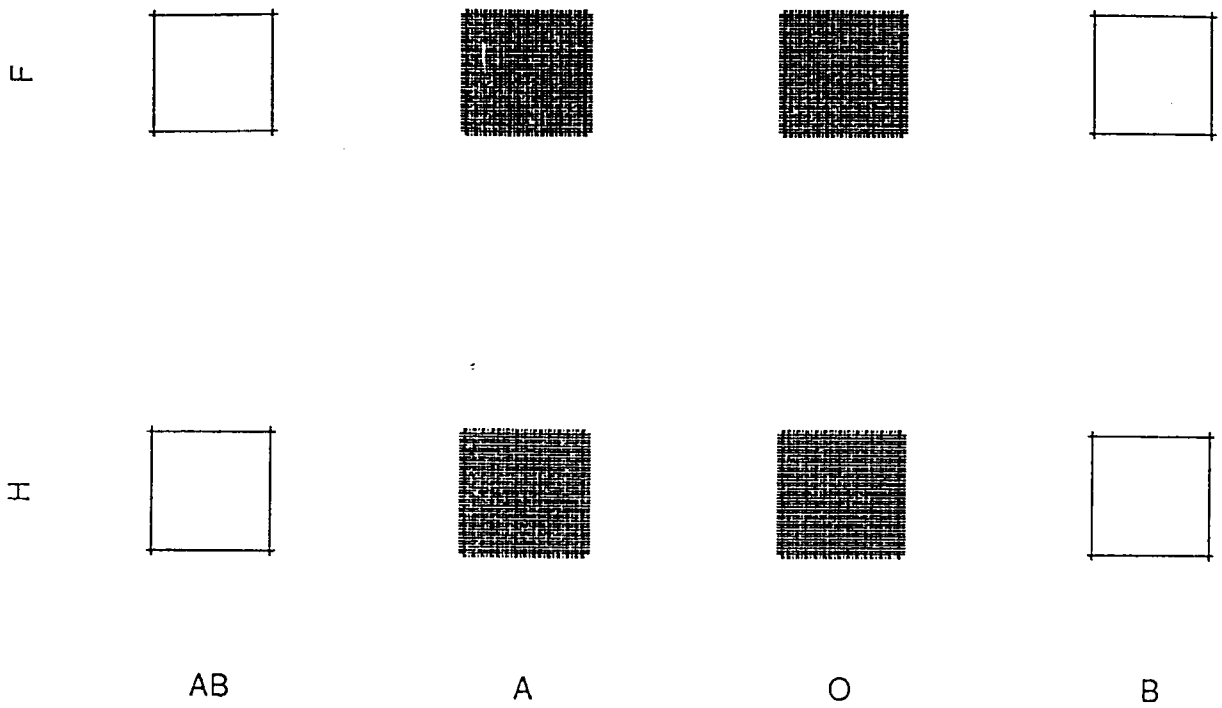
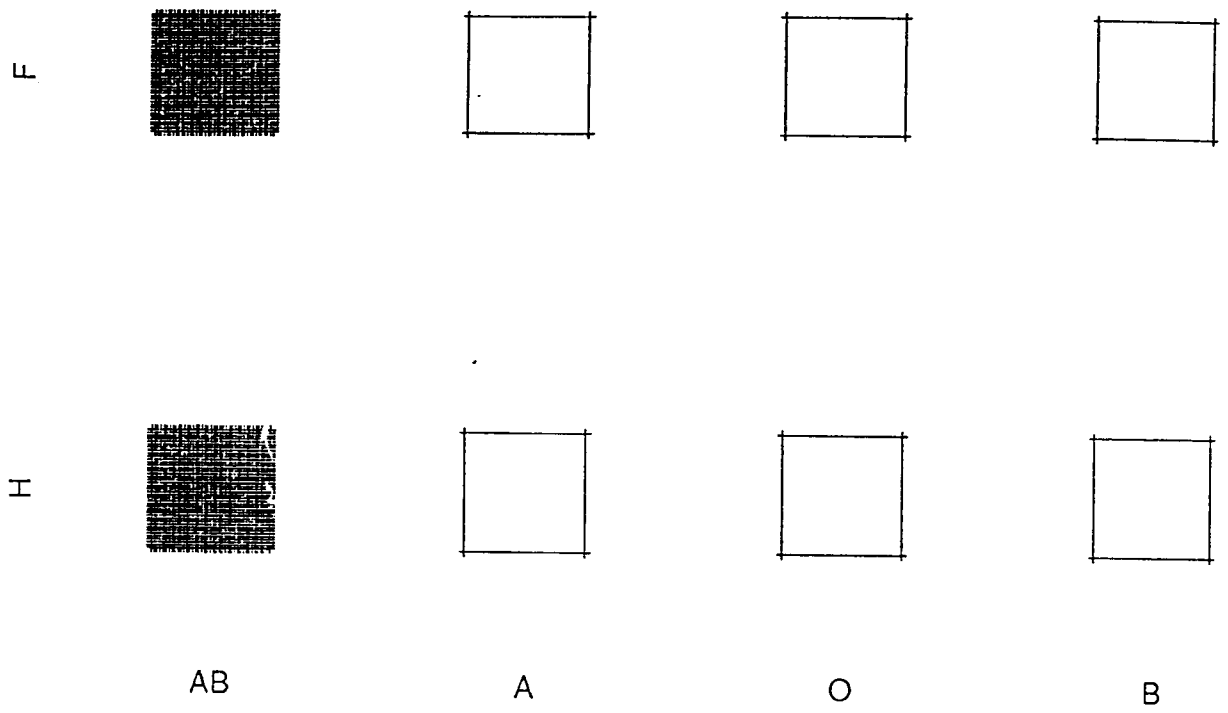


Tableau des contributions au khi2



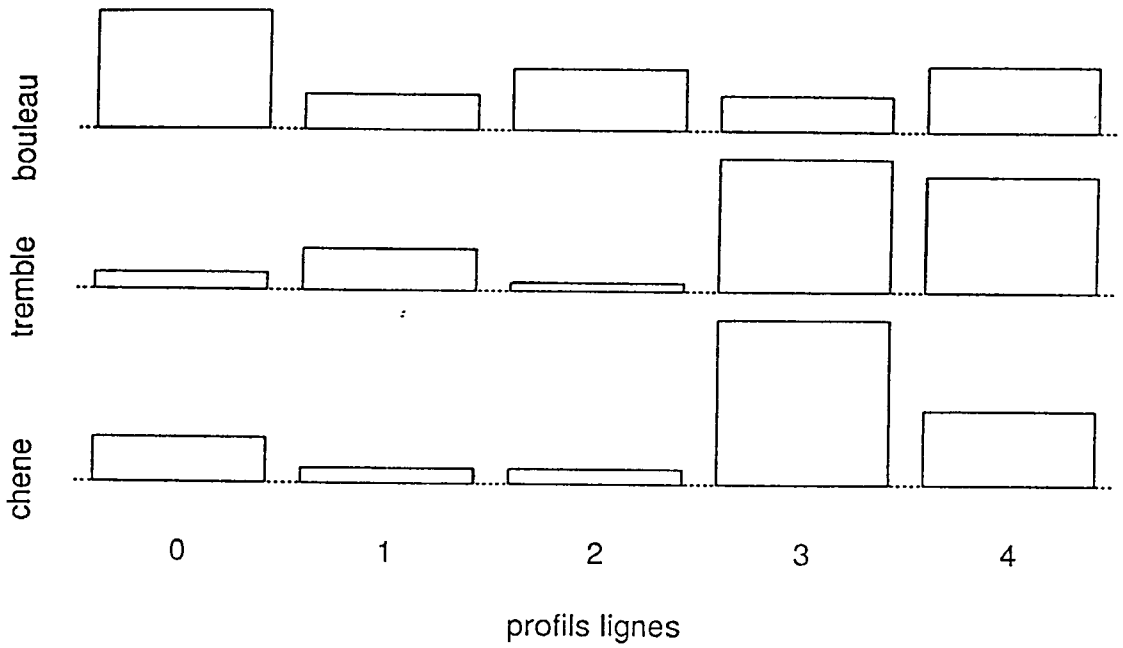
ESPÈCE D'ARBRE / RÉSISTANCE AU PRODUIT DÉBROUSAILLANT

Tableau des effectifs

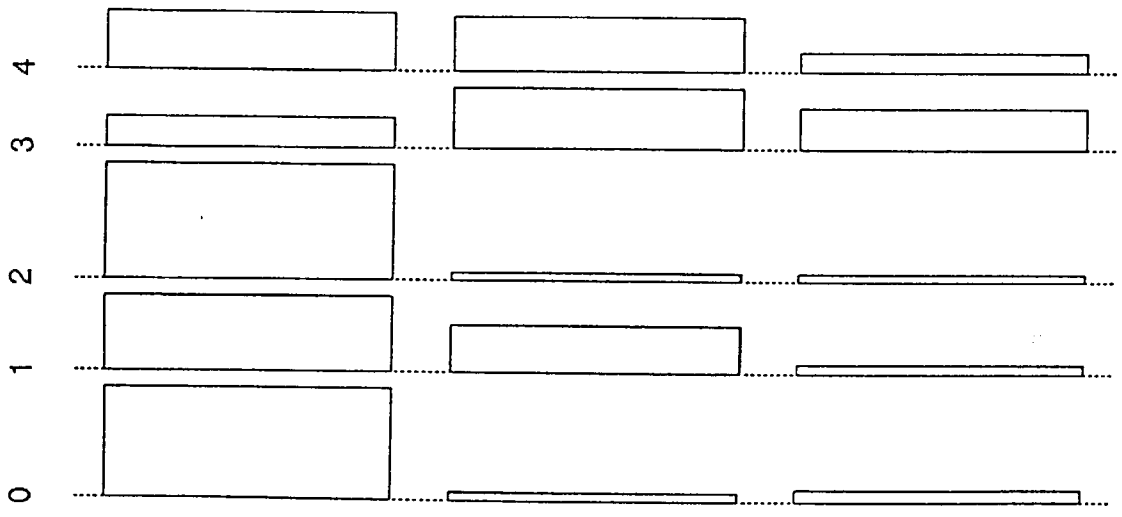
Tableau des effectifs

	0	1	2	3	4	
bouleau	27	8	14	8	15	72
tremble	2	5	1	16	14	38
chene	3	1	1	11	5	21
	32	14	16	35	34	131

Tableaux des profils



profils lignes



profils colonnes

Tableau des frequences relatives

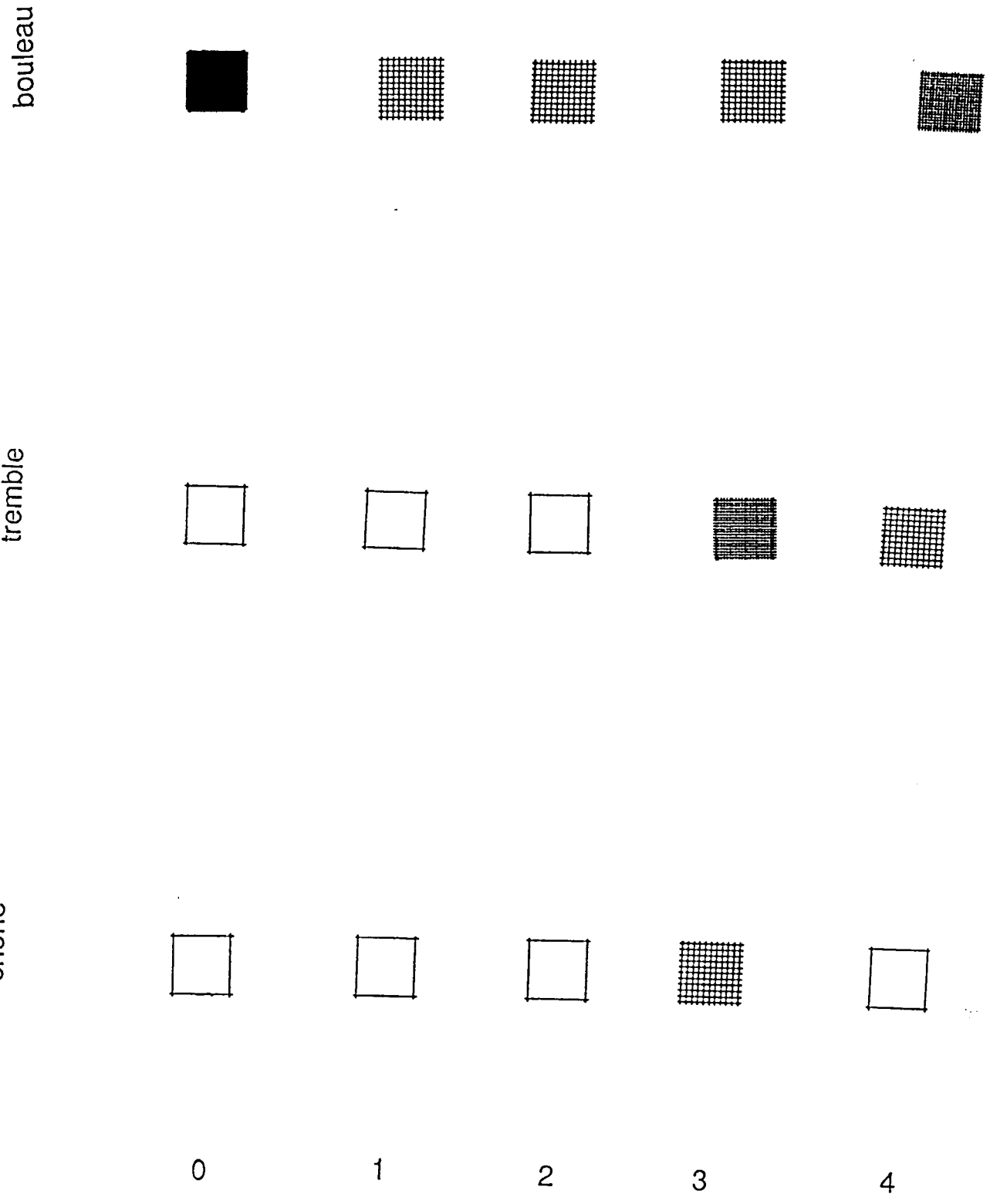


Tableau des frequences relatives

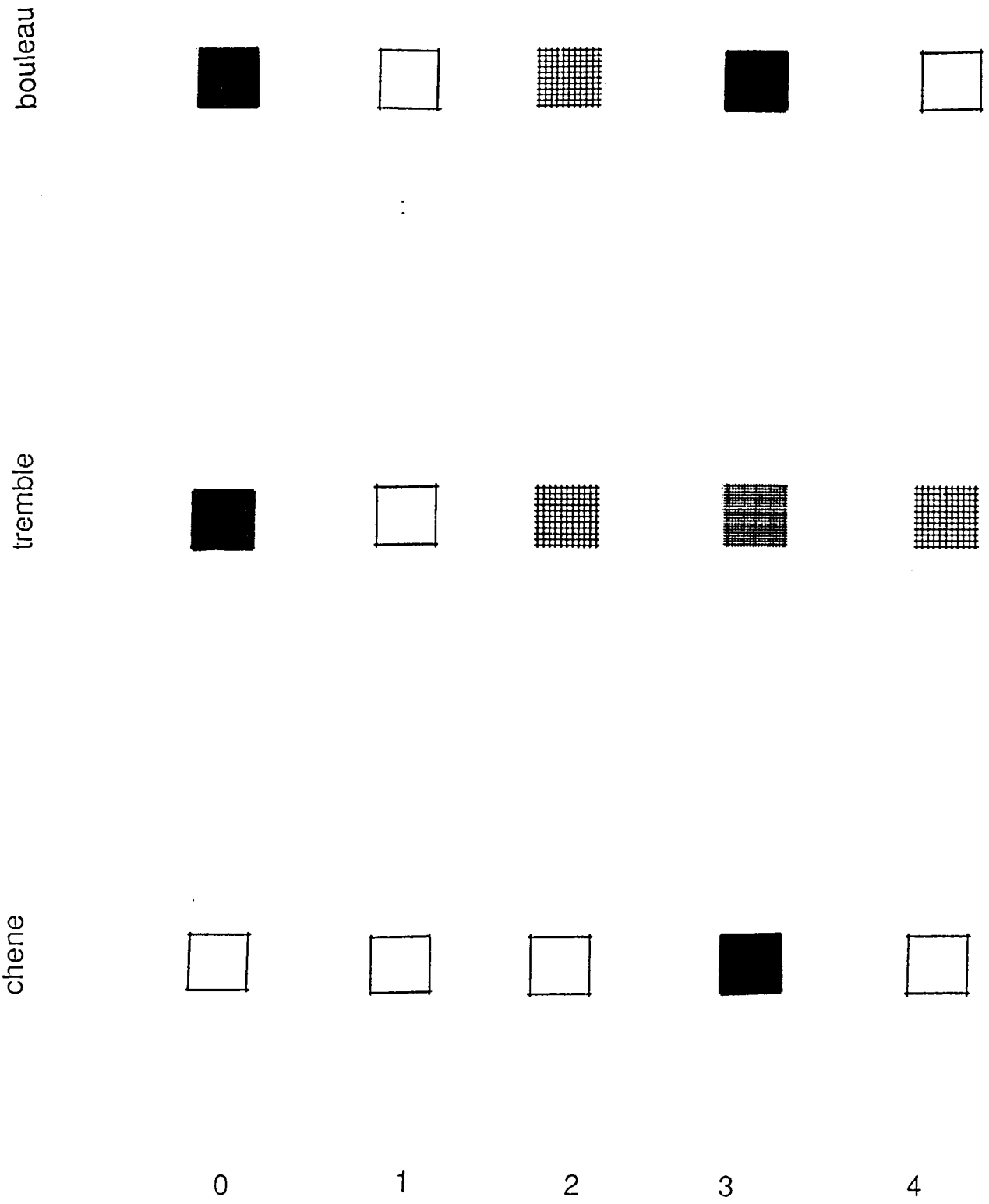


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  Tableau des rapports a l'independance
                      droit  sci.eco.      let.      sci. med.dent.     pharm.
        expl.agri. 0.9833905 1.1025054 0.8478206 1.3002535 0.6344218 1.3563000
         sal.agri. 0.9663703 0.8025360 1.2435027 1.0325245 0.5115417 0.6346789
            patron 1.0195907 1.1188980 0.9746178 0.8883701 1.0023251 1.2675181
 prof.lib. cad.sup. 0.9740222 0.9861582 0.8597441 0.8857023 1.4414640 1.3392959
          cad.moy. 0.9551624 0.9982576 1.0270114 1.1416315 0.9030259 0.8931306
           employe 1.0715341 0.9573783 1.0688271 1.0501382 0.7921373 0.8736168
          ouvrier 0.9219395 0.8855570 1.1463094 1.1452715 0.5600499 0.5033660
        pers.serv. 1.2562814 1.1737089 1.0911736 0.9228188 0.4987531 0.6188119
            autres 1.0817782 1.0161982 1.1391636 0.9360351 0.8476832 0.6568980

                      pluri       iut
        expl.agri. 1.0449718 1.9877922
         sal.agri. 1.2447100 1.7962190
            patron 0.9849444 1.0490960
 prof.lib. cad.sup. 0.7207080 0.4564624
          cad.moy. 1.1260134 0.9817286
           employe 1.1422045 1.1125992
          ouvrier 1.2017889 1.9975194
        pers.serv. 1.2135922 1.7513135
            autres 1.1512337 0.8899956



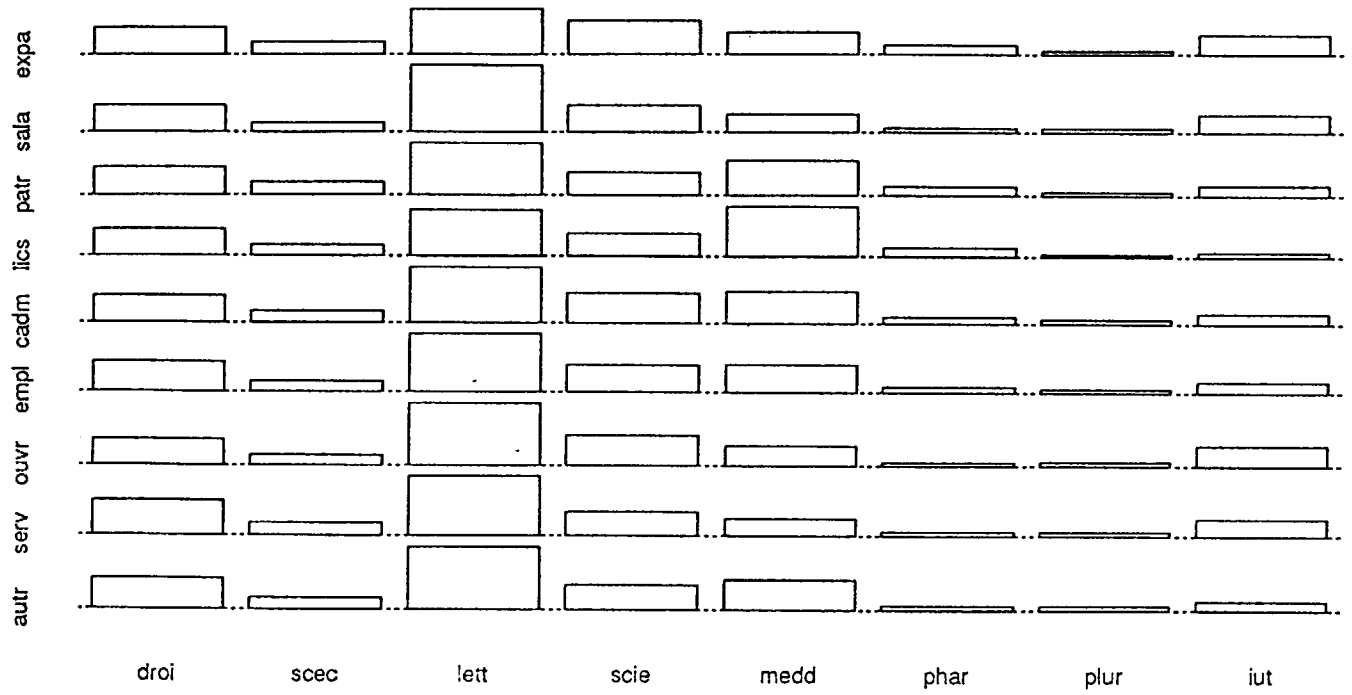
  Tableau des contributions au khi2
                         droit     sci.eco.          let.          sci.
        expl.agri. 4.728086e-05 7.228126e-04 0.0077112095 1.446084e-02
         sal.agri. 1.479324e-05 2.047158e-04 0.0015068228 1.295039e-05
            patron 1.332275e-04 1.969703e-03 0.0004345002 4.048532e-03
 prof.lib. cad.sup. 6.860308e-04 7.817800e-05 0.0388524548 1.242960e-02
          cad.moy. 1.046476e-03 6.343150e-07 0.0007378656 9.772547e-03
           employe 1.458810e-03 2.078702e-04 0.0026237861 6.707371e-04
          ouvrier 2.311418e-03 1.994124e-03 0.0157760033 7.492375e-03
        pers.serv. 1.762290e-03 3.249714e-04 0.0004333296 1.495924e-04
            autres 3.972341e-03 6.255514e-05 0.0223491000 2.274567e-03

                      med.dent.       pharm.        pluri          iut
        expl.agri. 2.884736e-02 0.0055213343 4.485166e-05 5.997887e-02
         sal.agri. 3.930467e-03 0.0004430020 1.013550e-04 2.974239e-03
            patron 2.363470e-06 0.0063043166 1.018152e-05 3.001088e-04
 prof.lib. cad.sup. 2.495175e-01 0.0296985114 1.026078e-02 1.077187e-01
          cad.moy. 6.164919e-03 0.0015086564 1.069554e-03 6.232801e-05
           employe 1.551303e-02 0.0011555514 7.459722e-04 1.296389e-03
          ouvrier 9.246852e-02 0.0237425297 1.998640e-03 1.353791e-01
        pers.serv. 8.490198e-03 0.0009893732 1.583938e-04 5.432235e-03
            autres 1.735557e-02 0.0177442054 1.757896e-03 2.578014e-03

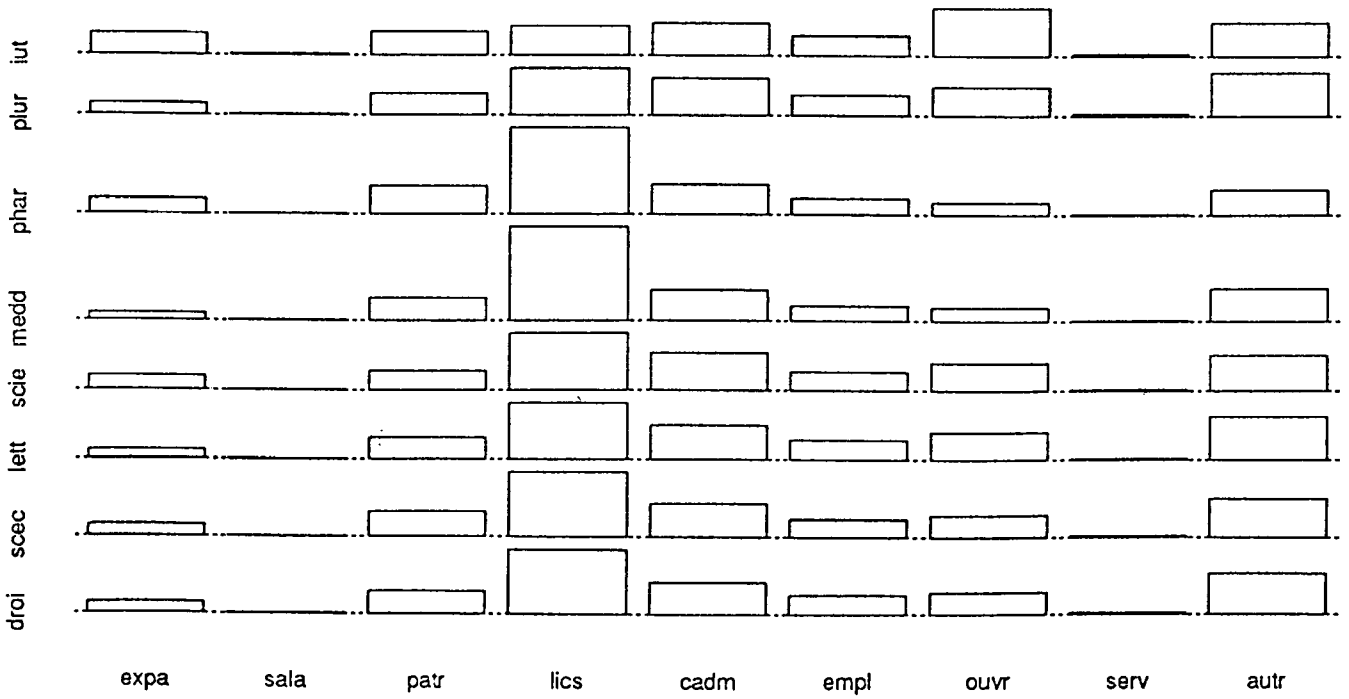
  Valeur du khi2
 [1] 474.6679
```

Probabilité # 0

Tableaux des profils



profils lignes



profils colonnes

Tableau des frequences relatives

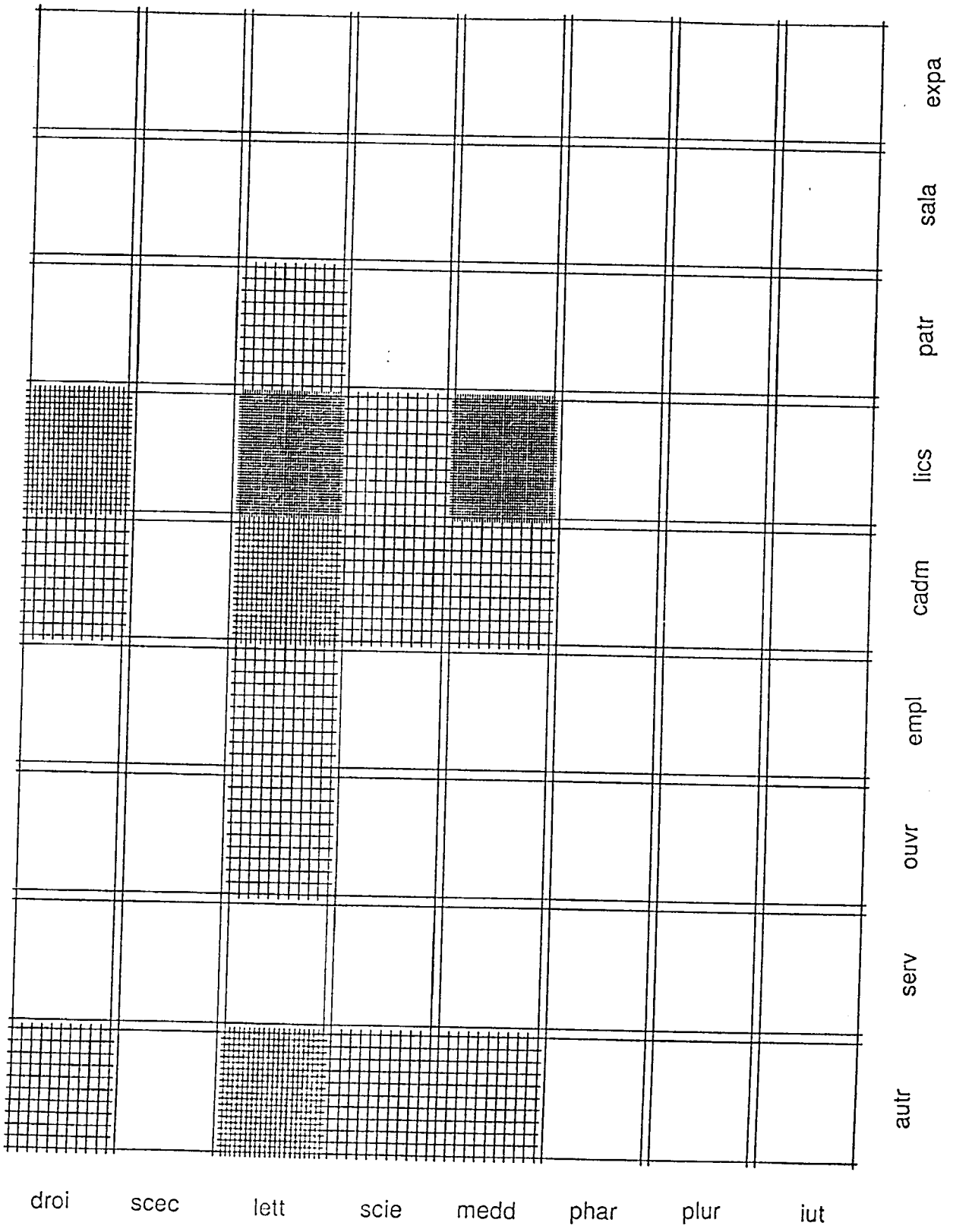
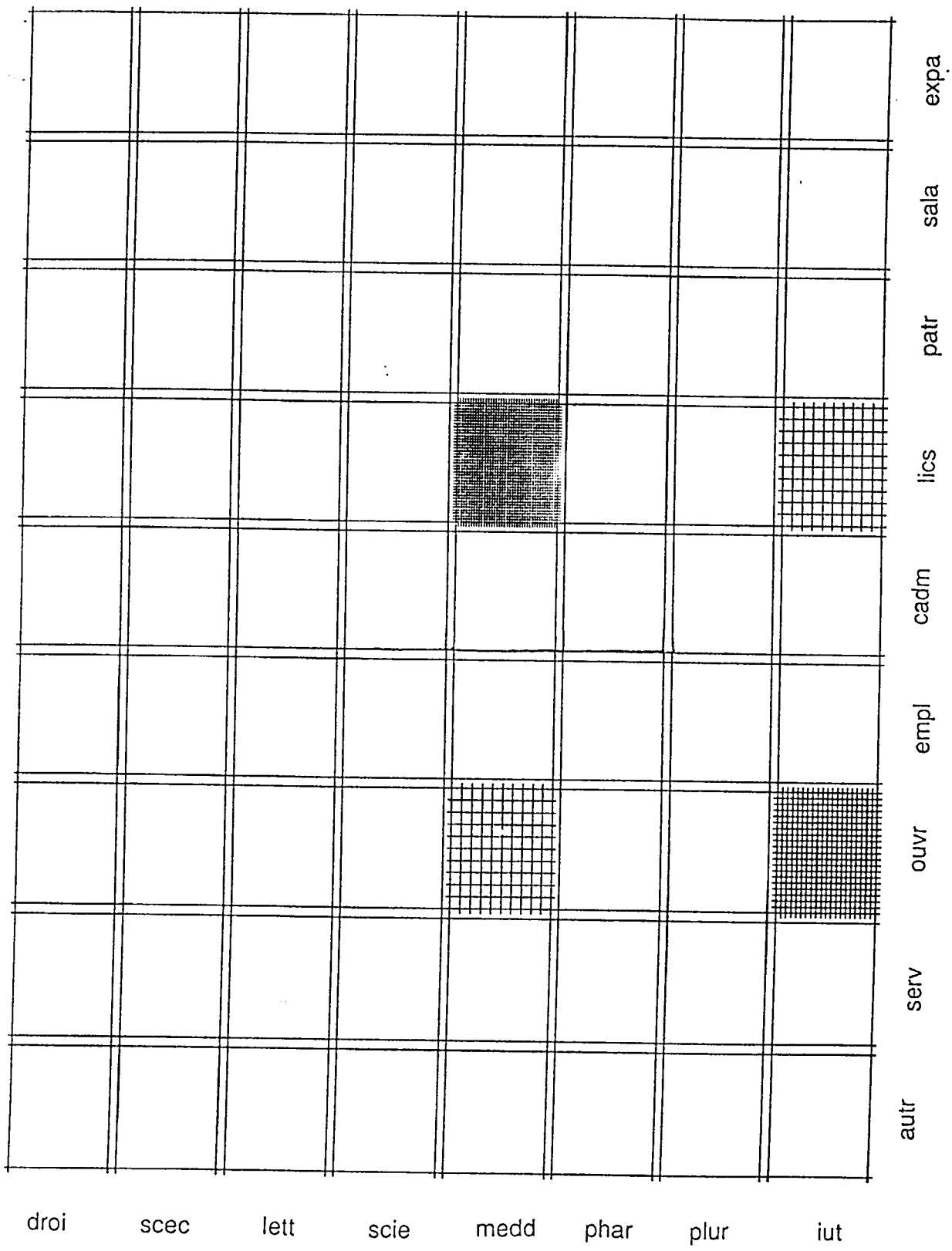


Tableau des contributions au khi2



Exemple introductif sur l'homogénéité sur 2 échantillons de la population INRA

Tableau des effectifs

```
    A  I  S  T
F 15  9  2 24  50
H  0  5 15 30  50
  15 14 17 54 100
```

Tableau des profils en lignes

```
    A  I  S  T
F 30 18  4 48 100
H  0 10 30 60 100
```

Tableau des profils en colonnes

```
     A         I         S         T
F 100  64.28571  11.76471  44.44444
H   0  35.71429  88.23529  55.55556
  100 100.00000 100.00000 100.00000
```

Tableau des fréquences relatives

```
    A  I  S  T
F 15  9  2 24  50
H  0  5 15 30  50
  15 14 17 54 100
```

Tableau des effectifs ajustés

```
     A  I    S  T
F  7.5  7  8.5 27  50
H  7.5  7  8.5 27  50
  15.0 14 17.0 54 100
```

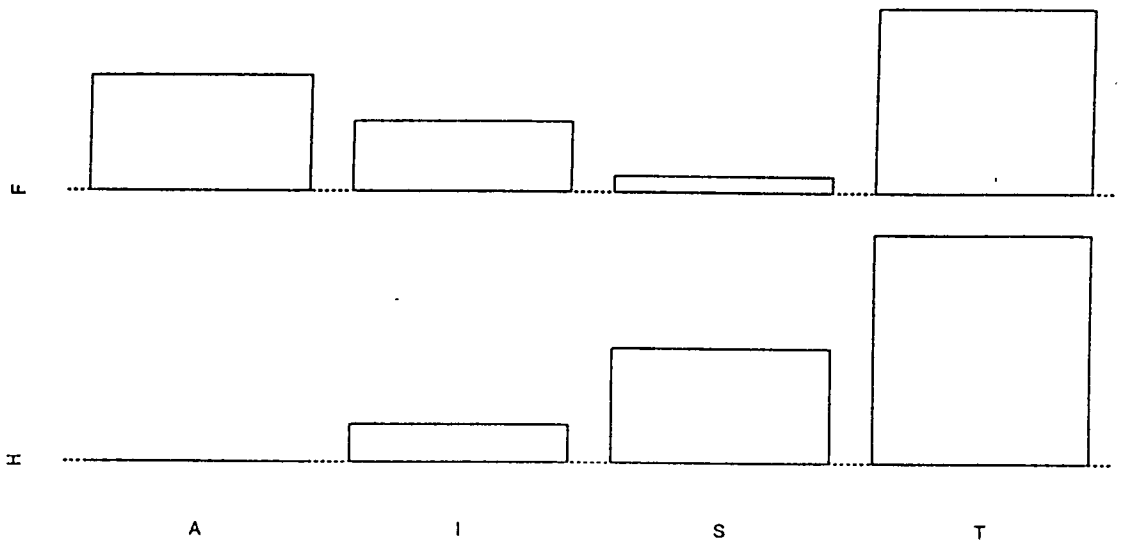
Tableau des contributions au khi2

```
           A         1         S         T
F 0.2803665 0.02136126 0.1858115 0.01246073
H 0.2803665 0.02136126 0.1858115 0.01246073
```

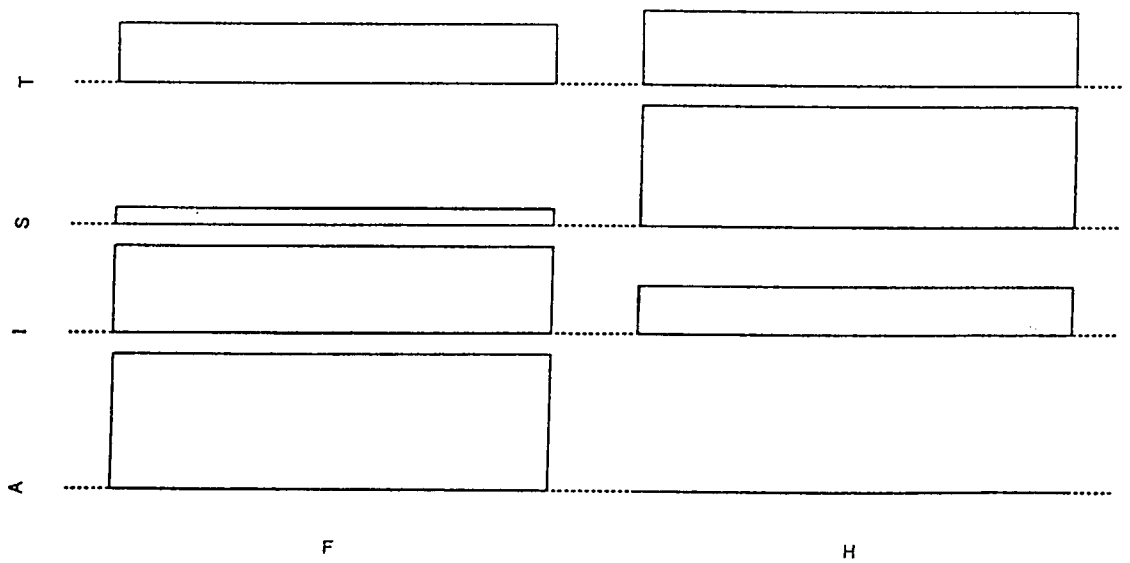
Valeur du khi2

```
[1] 26.7507
```

Tableaux des profils

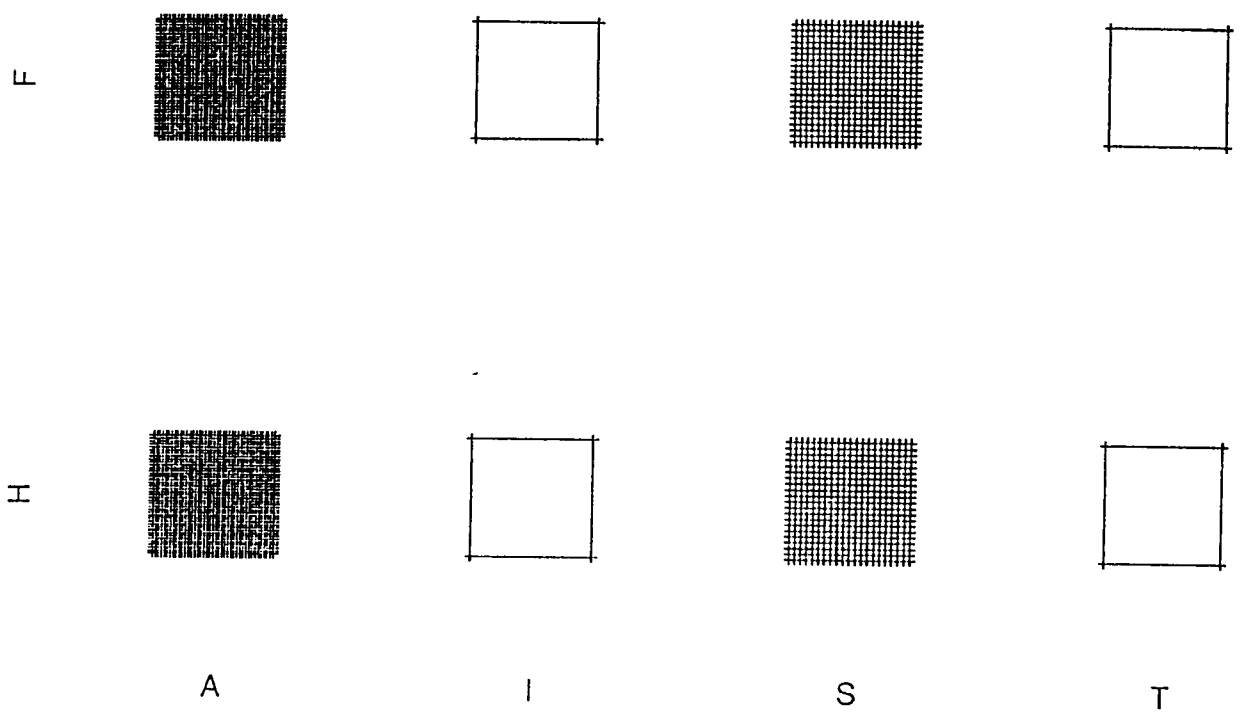


profils lignes



profils colonnes

Tableau des contributions au khi2

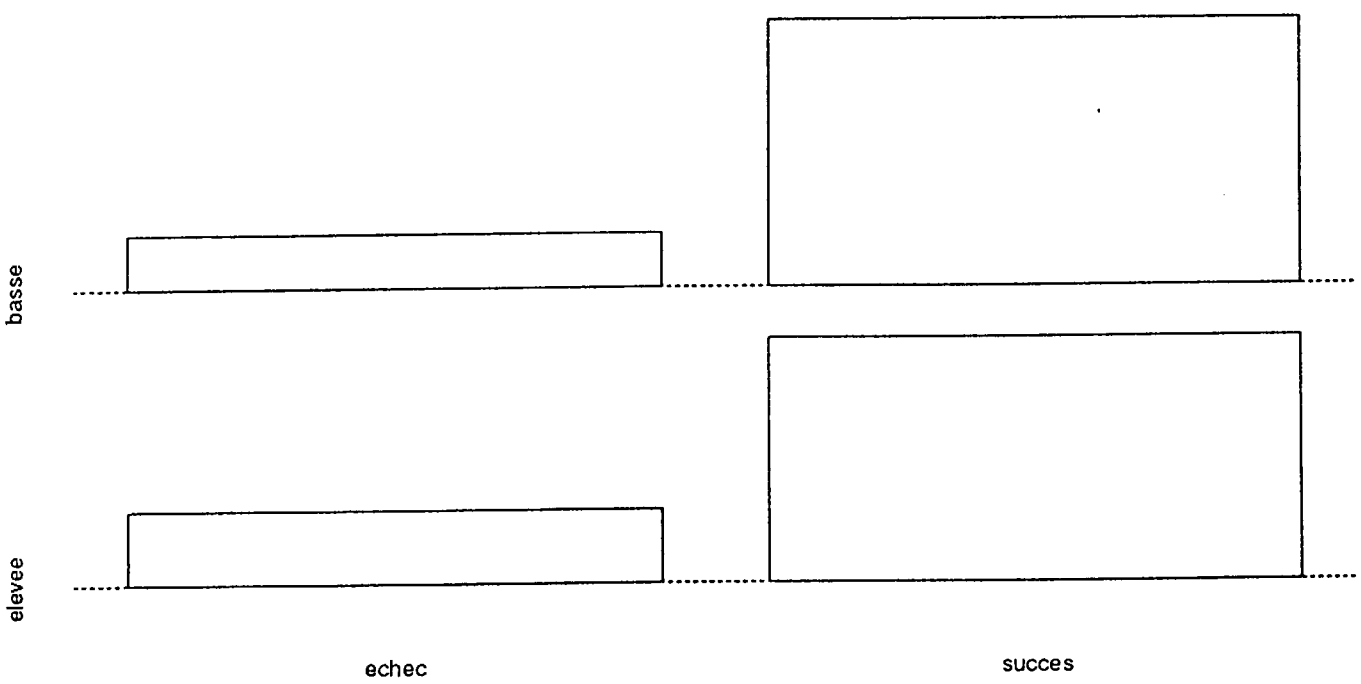


TENSION ARTÉRIELLE / RÉSULTAT D'UN TRAITEMENT

Tableau des effectifs

Résultats Tension A	échec	succès	total
basse	21	104	125
élevée	29	96	125
total	50	200	250

Tableaux des profils



profils lignes

Tableau des frequences relatives

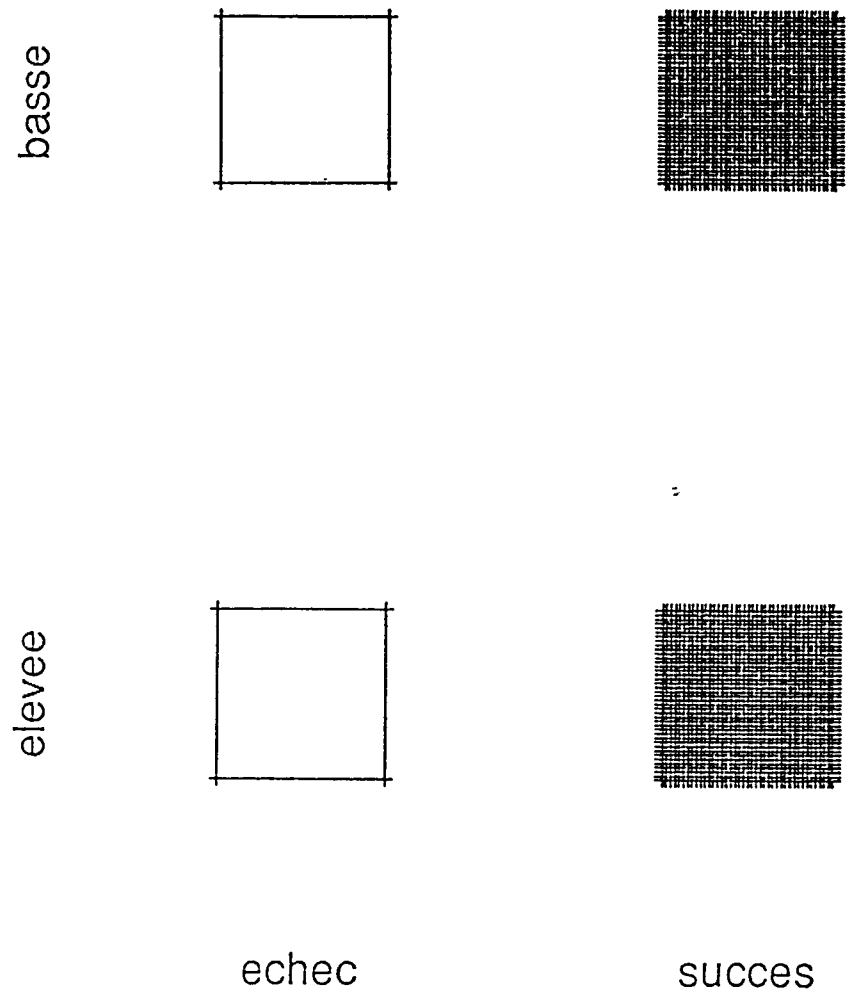
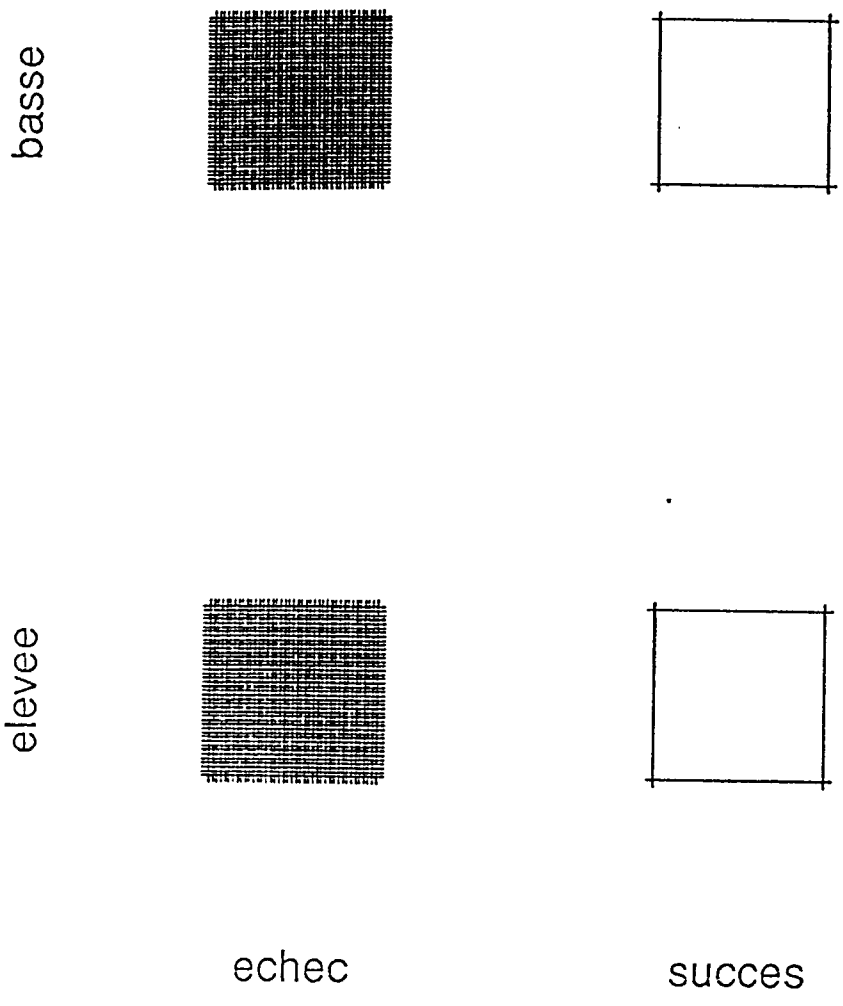


Tableau des contributions au khi2



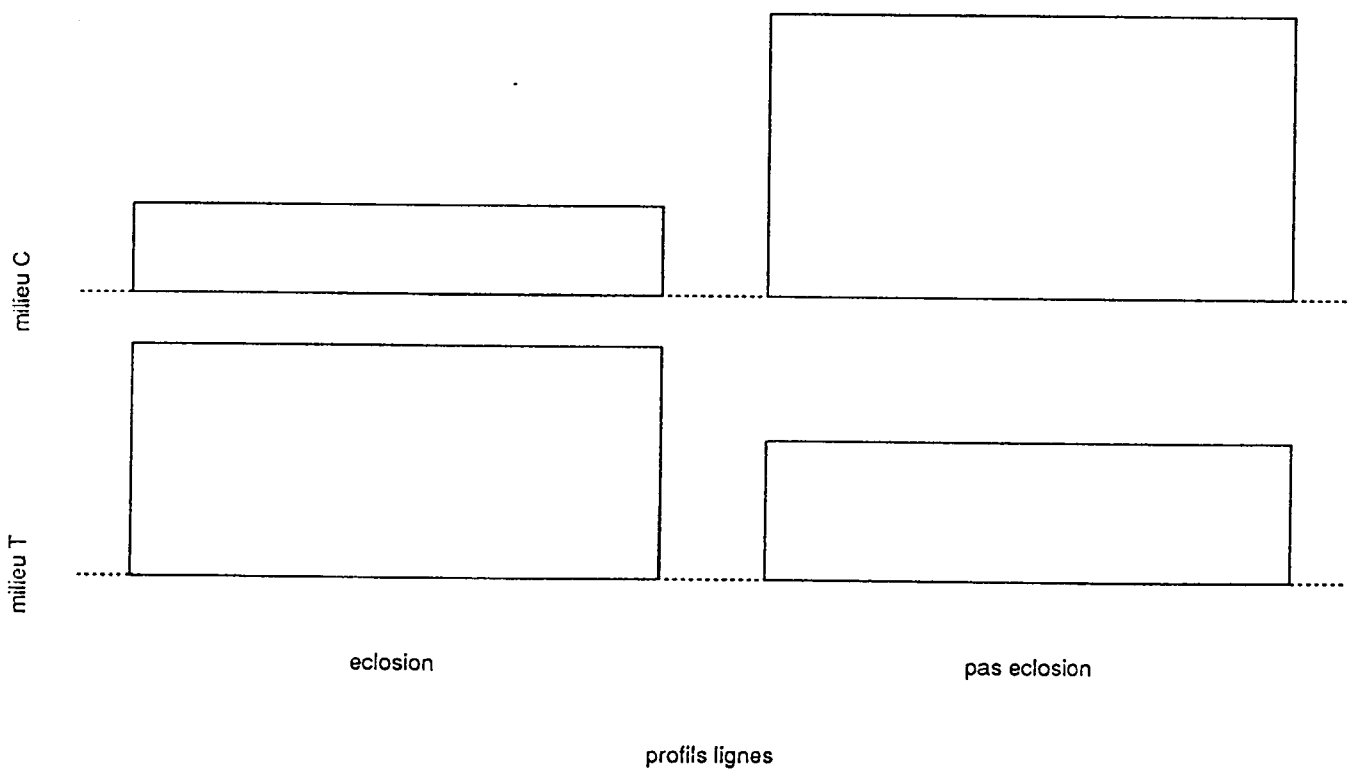
milieu C		milieu T	
n° œuf	éclosion	n° œuf	éclosion
1	-	1	-
2	-	2	+
3	-	3	+
4	-	4	+
5	-	5	+
6	-	6	-
7	+	7	+
8	-	8	-
9	-	9	-
10	+	10	+
11	-	11	+
12	-	12	-
13	-	13	+
14	-	14	-
15	-	15	+
16	+	16	+
17	+		
18	-		
19	-		
20	+		
21	-		
22	+		
23	-		
24	-		
25	-		

Tableau des effectifs

	éclosion	non éclosion
milieu C		
milieu T		

Tableaux des profils

- Tableaux des profils



Stade de developpement

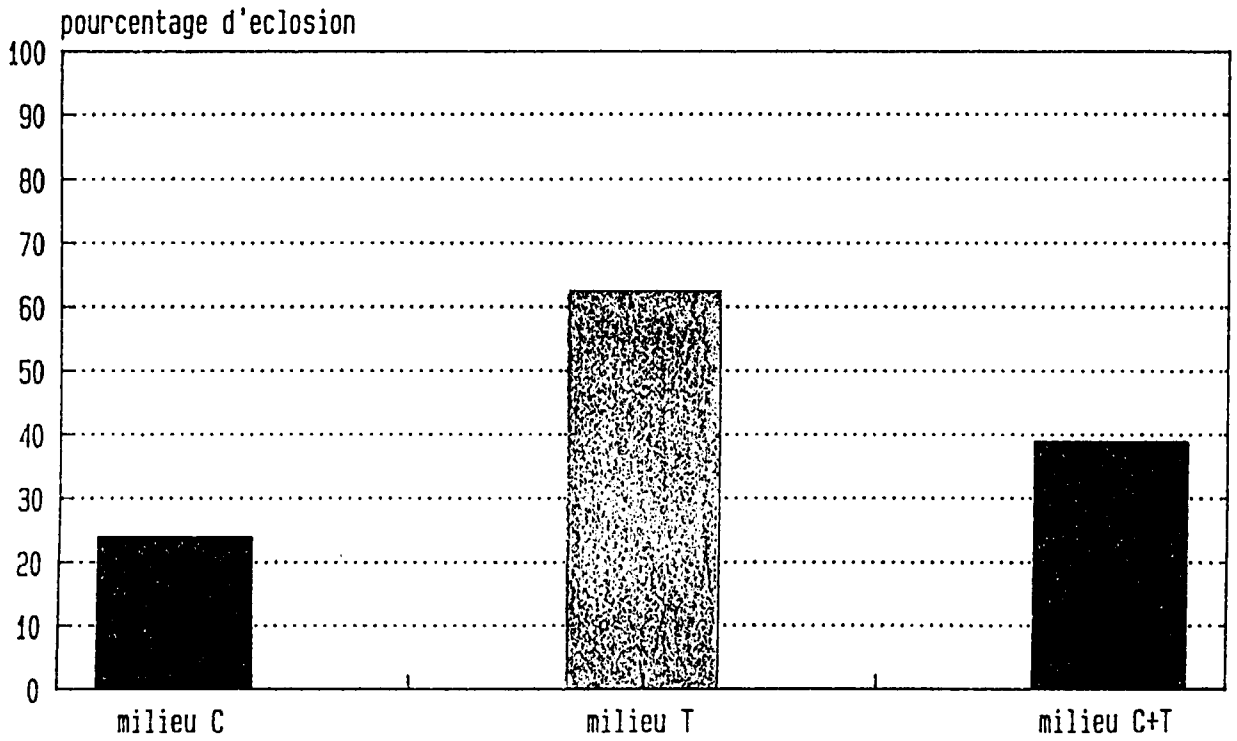
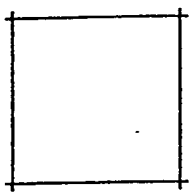
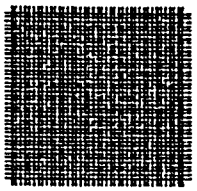


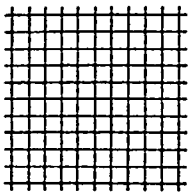
Tableau des frequences relatives

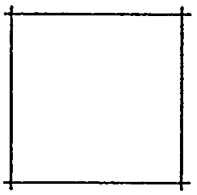
milieu C





milieu T



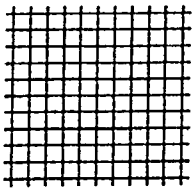


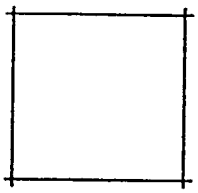
eclosion

pas eclosion

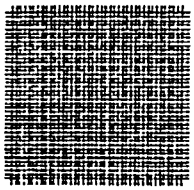
Tableau des contributions au khi2

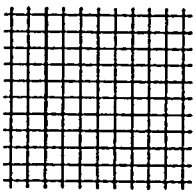
milieu C





milieu T





eclosion

pas eclosion

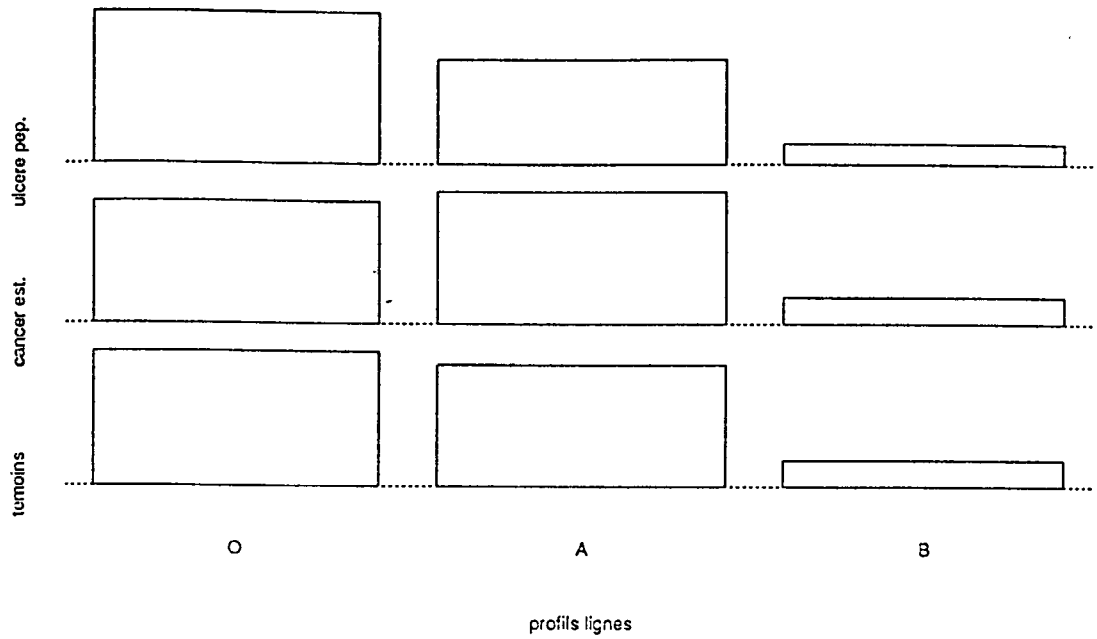
TYPE DE MALADIE - GROUPE SANGUIN

A partir de 3 échantillons donnés de malades dont la maladie est connue.

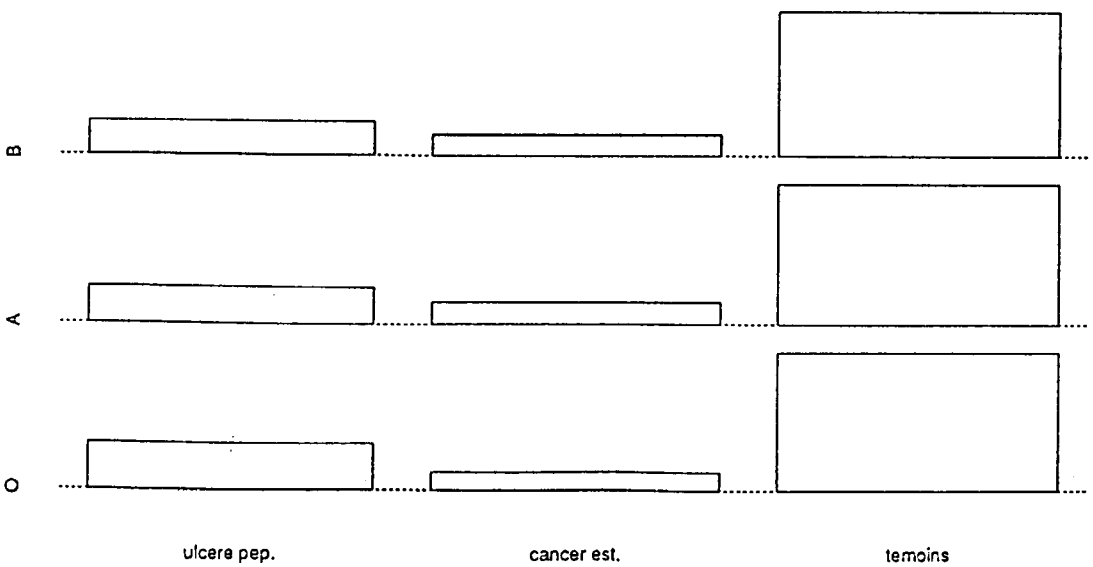
Tableau des effectifs

Groupe Maladie	O	A	B	total
ulcère peptique	983	679	134	1796
cancer estomac	383	416	84	883
témoins	2892	2625	570	6087
total	4258	3720	788	8766

Tableaux des profils



profils lignes



profils colonnes

Tableau des frequences relatives

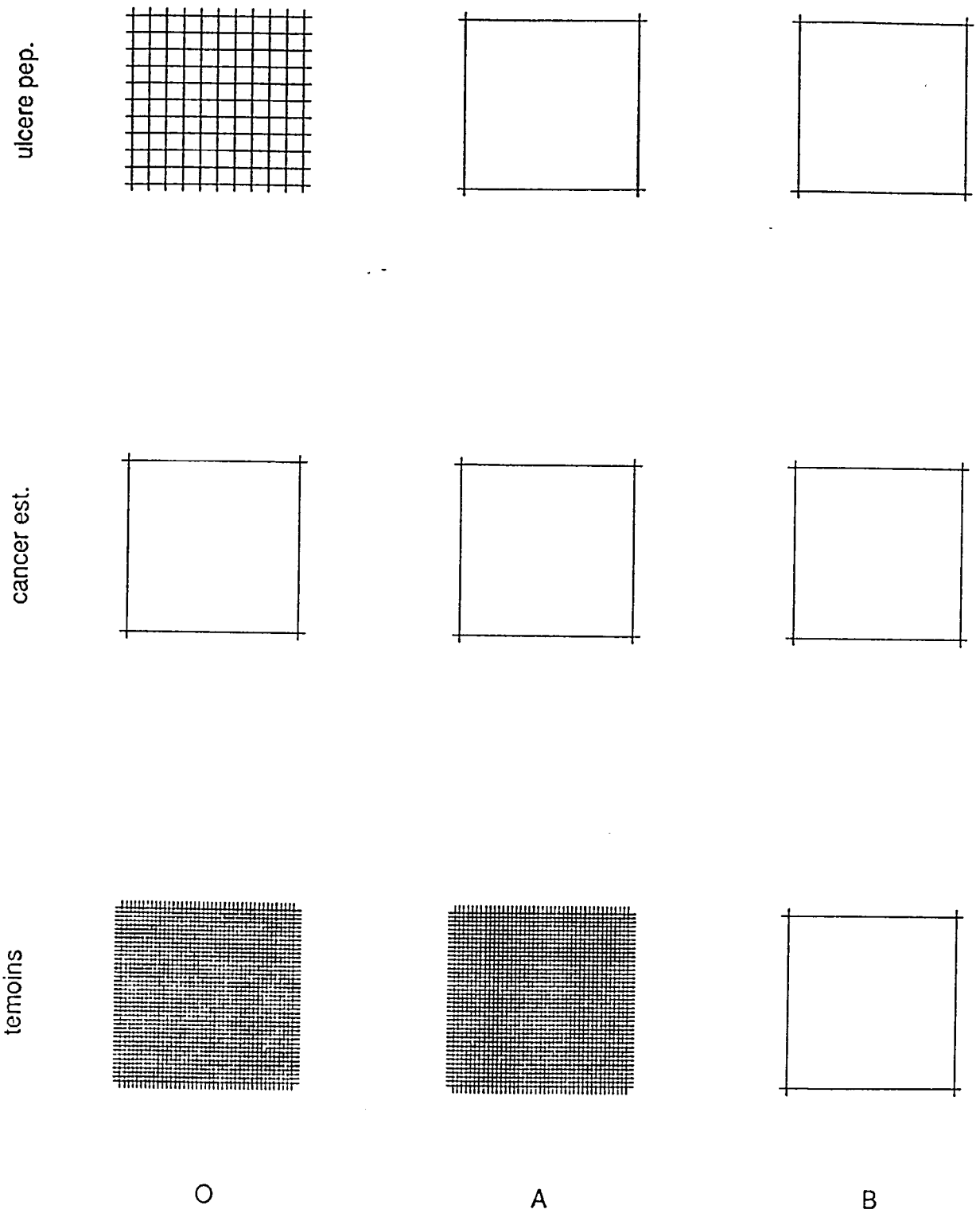
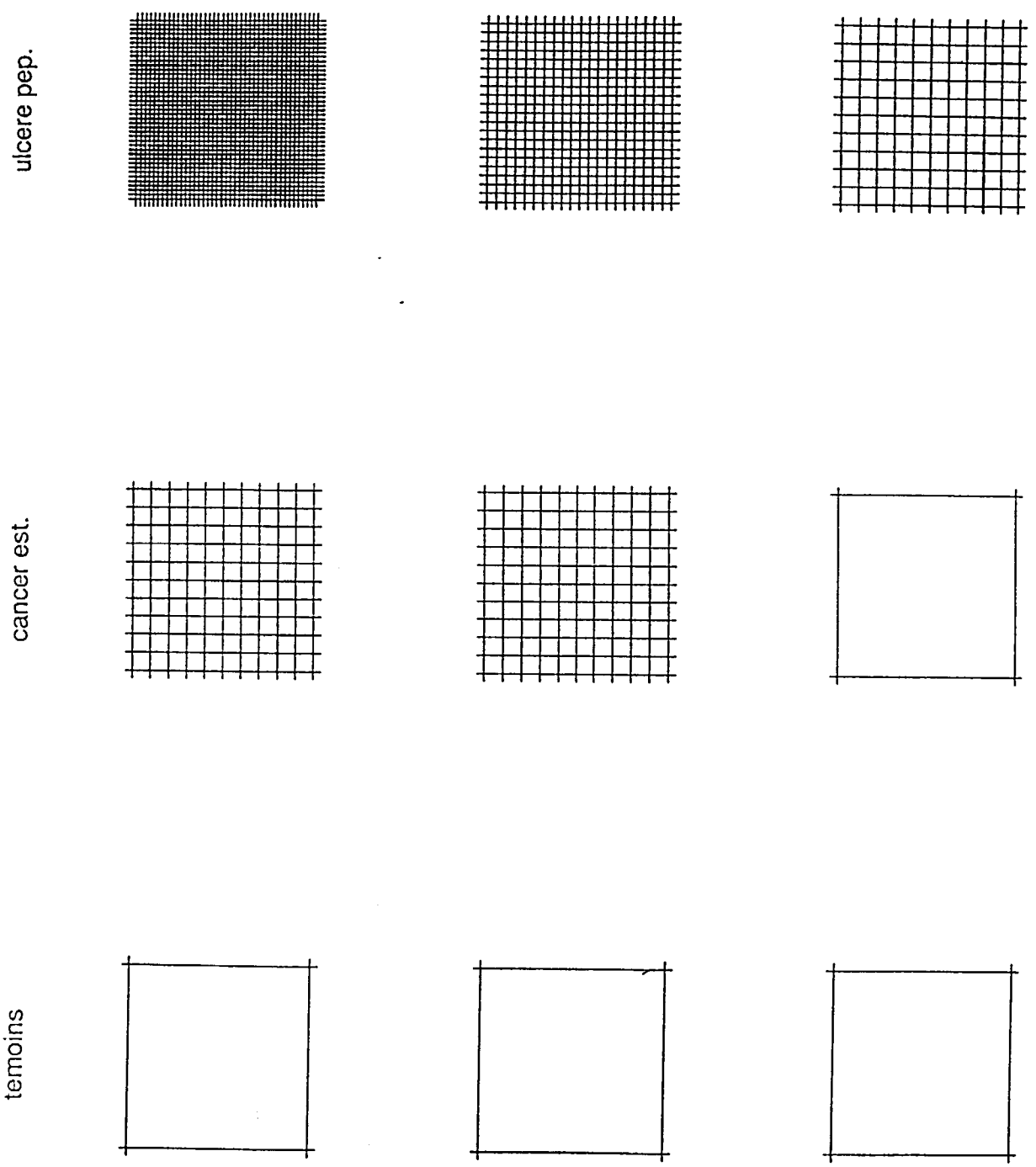



Tableau des contributions au khi2