EXPERIMENTO DE ELABORACION DE UN TEPACHE

FACTORES:

X1=TEMPERATURA: 20, 25

X2=CONCENTRACION DE AZUCAR: 5%, 10%

X3:pH: 4, 5

X4=TIEMPO DE FERMENTACION: 48, 72

X5=VARIEDAD DE PIÑA: CAYENA, ANANA

X6=TIPO DE RECIPIENTE: BARRICAS, ACERO INOXIDABLE

DISEÑO 26-1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x1 | x2 | x3 | x4 | x5 | x6 | y |
| -1 | -1 | -1 | -1 | -1 | -1 | 4 |
| 1 | 1 | -1 | -1 | -1 | -1 | 4 |
| 1 | -1 | 1 | -1 | -1 | -1 | 5.38293152 |
| -1 | 1 | 1 | -1 | -1 | -1 | 4 |
| 1 | -1 | -1 | 1 | -1 | -1 | 4 |
| -1 | 1 | -1 | 1 | -1 | -1 | 5.26829115 |
| -1 | -1 | 1 | 1 | -1 | -1 | 4 |
| 1 | 1 | 1 | 1 | -1 | -1 | 9.21885624 |
| 1 | -1 | -1 | -1 | 1 | -1 | 4 |
| -1 | 1 | -1 | -1 | 1 | -1 | 5.04598796 |
| -1 | -1 | 1 | -1 | 1 | -1 | 4 |
| 1 | 1 | 1 | -1 | 1 | -1 | 8.78762591 |
| -1 | -1 | -1 | 1 | 1 | -1 | 5.22780864 |
| 1 | 1 | -1 | 1 | 1 | -1 | 6.68784901 |
| 1 | -1 | 1 | 1 | 1 | -1 | 9.35415313 |
| -1 | 1 | 1 | 1 | 1 | -1 | 6.19914669 |
| 1 | -1 | -1 | -1 | -1 | 1 | 4 |
| -1 | 1 | -1 | -1 | -1 | 1 | 5.91127246 |
| -1 | -1 | 1 | -1 | -1 | 1 | 4 |
| 1 | 1 | 1 | -1 | -1 | 1 | 9.59843062 |
| -1 | -1 | -1 | 1 | -1 | 1 | 5.86923329 |
| 1 | 1 | -1 | 1 | -1 | 1 | 6.34944815 |
| 1 | -1 | 1 | 1 | -1 | 1 | 9.1400779 |
| -1 | 1 | 1 | 1 | -1 | 1 | 6.26968062 |
| -1 | -1 | -1 | -1 | 1 | 1 | 5.67180915 |
| 1 | 1 | -1 | -1 | 1 | 1 | 6.30745886 |
| 1 | -1 | 1 | -1 | 1 | 1 | 9.80583814 |
| -1 | 1 | 1 | -1 | 1 | 1 | 7.01549976 |
| 1 | -1 | -1 | 1 | 1 | 1 | 6.34539381 |
| -1 | 1 | -1 | 1 | 1 | 1 | 9.66563172 |
| -1 | -1 | 1 | 1 | 1 | 1 | 6.26041288 |
| 1 | 1 | 1 | 1 | 1 | 1 | 10 |

DISEÑO 24 NO REPLICADO CON 5 PUNTOS CENTRALES

Por los resultados del diseño anterior, se procedió a realizar un nuevo diseño, dejando fijo la variedad de piña en Anana y el tipo de recipiente de acero inoxidable.

FACTORES:

X1=TEMPERATURA: 20, 30 CON PUNTO CENTRAL EN 25

X2=CONCENTRACION DE AZUCAR: 5%, 15% CON PUNTO CENTRAL 10

X3=pH: 4, 6 CON PUNTO CENTRAL 5

X4=TIEMPO DE FEREMENTACION 48, 96 CON PUNTO CENTRAL 72

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1 | x2 | x3 | x4 | y |
| -1 | -1 | -1 | -1 | 4 |
| 1 | -1 | -1 | -1 | 4 |
| -1 | 1 | -1 | -1 | 5.42953771 |
| 1 | 1 | -1 | -1 | 4.60460597 |
| -1 | -1 | 1 | -1 | 4 |
| 1 | -1 | 1 | -1 | 8.45317261 |
| -1 | 1 | 1 | -1 | 4.21584256 |
| 1 | 1 | 1 | -1 | 10 |
| -1 | -1 | -1 | 1 | 5.00610512 |
| 1 | -1 | -1 | 1 | 4.20851201 |
| -1 | 1 | -1 | 1 | 7.40731646 |
| 1 | 1 | -1 | 1 | 6.40685405 |
| -1 | -1 | 1 | 1 | 4 |
| 1 | -1 | 1 | 1 | 10 |
| -1 | 1 | 1 | 1 | 5.75501643 |
| 1 | 1 | 1 | 1 | 10 |
| 0 | 0 | 0 | 0 | 5.79743378 |
| 0 | 0 | 0 | 0 | 6.06284947 |
| 0 | 0 | 0 | 0 | 5.81839519 |
| 0 | 0 | 0 | 0 | 5.71753926 |
| 0 | 0 | 0 | 0 | 6.29312975 |
| 0 | 0 | 0 | 0 | 5.95484474 |
| 0 | 0 | 0 | 0 | 6.01350564 |
| 0 | 0 | 0 | 0 | 5.71505036 |

Dado que en el diseño anterior se encontró efecto significativo de curvatura, se procedió a realizar un diseño de composición central con puntos estrella y aumentando 4 nuevos puntos centrales para una mejor estimación de la superficie.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x1 | x2 | x3 | x4 | y |
| -1 | -1 | -1 | -1 | 4 |
| 1 | -1 | -1 | -1 | 4 |
| -1 | 1 | -1 | -1 | 5.42953771 |
| 1 | 1 | -1 | -1 | 4.60460597 |
| -1 | -1 | 1 | -1 | 4 |
| 1 | -1 | 1 | -1 | 7.45 |
| -1 | 1 | 1 | -1 | 4.21584256 |
| 1 | 1 | 1 | -1 | 6.5 |
| -1 | -1 | -1 | 1 | 5.00610512 |
| 1 | -1 | -1 | 1 | 4.20851201 |
| -1 | 1 | -1 | 1 | 7.40731646 |
| 1 | 1 | -1 | 1 | 6.40685405 |
| -1 | -1 | 1 | 1 | 4 |
| 1 | -1 | 1 | 1 | 6.5 |
| -1 | 1 | 1 | 1 | 5.75501643 |
| 1 | 1 | 1 | 1 | 6.5 |
| 0 | 0 | 0 | 0 | 5.79743378 |
| 0 | 0 | 0 | 0 | 6.06284947 |
| 0 | 0 | 0 | 0 | 5.81839519 |
| 0 | 0 | 0 | 0 | 5.71753926 |
| 0 | 0 | 0 | 0 | 6.29312975 |
| 0 | 0 | 0 | 0 | 5.95484474 |
| 0 | 0 | 0 | 0 | 6.01350564 |
| 0 | 0 | 0 | 0 | 5.71505036 |
| -2 | 0 | 0 | 0 | 4.29112346 |
| 2 | 0 | 0 | 0 | 2.02218452 |
| 0 | -2 | 0 | 0 | 4.14980129 |
| 0 | 2 | 0 | 0 | 7.4551396 |
| 0 | 0 | -2 | 0 | 2 |
| 0 | 0 | 2 | 0 | 7.00166125 |
| 0 | 0 | 0 | -2 | 5.37165868 |
| 0 | 0 | 0 | 2 | 6.86245564 |
| 0 | 0 | 0 | 0 | 5.99730056 |
| 0 | 0 | 0 | 0 | 5.78845781 |
| 0 | 0 | 0 | 0 | 6.16450898 |
| 0 | 0 | 0 | 0 | 5.75583127 |